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Physical Applied Sc... nals

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A JOURNAL OF SHIPBUILDING, MARINE ENGINEERING, DOCKS, HARBOURS AND SHIPPING

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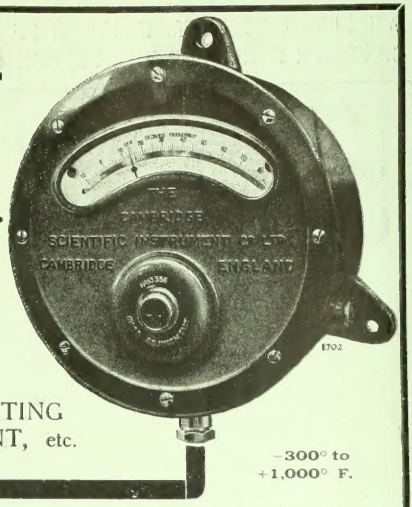

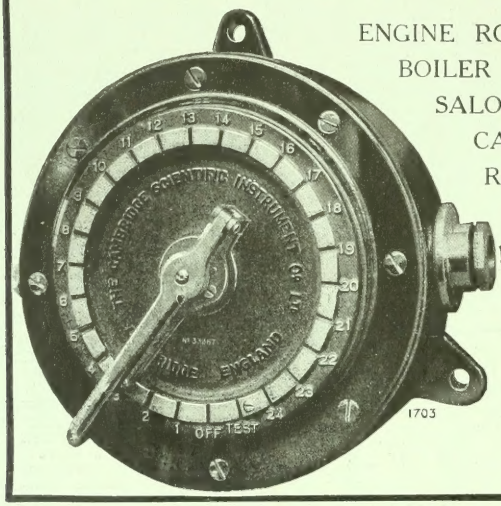

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ACCORDING to the latest report Holland has accepted the conditions of the Allies in respect to the use of Dutch shipping, and doubtless the attitude of the Dutch Government will be explained in the course of this week.

Dutch Shipping.

It is stated that a million tons of Dutch shipping is in Allied ports, of which 70 per cent. is in the United States, and 15 per cent. in British ports. These vessels are enjoying the hospitality of Allied ports at the same time as they are withdrawn from the world's trade, and, if the cause of this situation is to be sought, it lies in the terrorism which Germany has introduced on the high seas. The real quarrel of the Dutch is with Teutonic arrogance and pretensions which are brutally subordinating the rights of neutrals to criminal ruthlessness. Holland is necessarily conscious of the menace of German military power, and therein we have to seek one motive of her very narrow interpretation of the doctrines of neutrality in respect to the sea. Her refusal to admit our merchantmen armed for self-defence to her ports was one instance. Germany's unconcealed aim is now to hold up the shipping trade of the world, and to bring about the inactivity of Dutch shipping is obviously a part of that policy. It has become impossible for the Allies to acquiesce in it. Nor is it possible to consent to the employment of Dutch ships exclusively in waters outside the "danger zone." Apart from the question of the hospitality of Allied harbours, Holland is seeking wheat supplies from America. Thus the Allies have a good deal to offer. Moreover, they have given ample assurances that Dutch private interests will not suffer.

American tradition is averse to the acceptance by United States citizens of personal distinctions and honours. We do not criticise it, but we wish that it will prove elastic enough to allow the British Government to confer some signal mark of recognition on the gallant seamen of the U.S. destroyer *Parker* which went to the rescue of the survivors of the *Glenart Castle*. Two naval ratings jumped into a bitterly cold and choppy sea in this brave endeavour to save life. Others jumped on small rafts or wreckage with the same praiseworthy aim. Dr. Macnamara, the Secretary to the Admiralty, mentioned these deeds when in the House of Commons he expressed profound appreciation of "the seamanship and very great gallantry displayed by the United States destroyer." The Union-Castle Company has asked the American Admiral to be allowed to do something to recognise the gallantry of the American sailors, but he has in very courteous terms refused his consent. Sir Owen Philipps has suggested to the Admiralty that the Government itself should offer to mark to the individual sailors the appreciation of the British nation. Our very great gratitude has already been intimated. Of course we must avoid embarrassing the tradition of the American Service, but it is satisfactory that Dr. Macnamara has promised to see whether some form of substantial recognition compatible with the ideas of the United States on these matters cannot be awarded. A medal for gallantry in saving life at sea is surely a decoration which the most stern unbending democrat can approve.

Gallantry of American Seamen.

The number of casualties to steamers caused by collision has been extraordinary recently. The insurance market has been discussing the matter under all its aspects, and there is no doubt that some interesting developments may be expected in the near future. Of course, the essential, and at the same time the most complicated, part of the problem is that which concerns the nature of the casualty. A collision in broad daylight, when faulty navigation on one or both sides is apparent, is obviously a marine casualty, but many cases involve other factors. Steaming in convoy and with lights out has undoubtedly caused collisions otherwise avoidable, and it is possible that the removal of lights and bearings has also had its effect. Losses from these causes cannot be regarded as marine losses pure and simple. Whether any definite rule regarding them will be established, or whether any apportionment over both sets of policies will result, remains to be seen. The fact is clear, however, that underwriters on the marine policies are not satisfied that these claims should be wholly borne by them, and it seems probable that some interesting litigation will follow in the near future. In the meantime losses of this nature continue to be settled on the loan basis already mentioned in these columns, the owner being reimbursed by the marine underwriter on the understanding that the amount received is regarded as a loan, and that subsequent recoveries from the war risk underwriters shall be refunded.

Collision Claims.

Apparently, there is a great deal of feeling at Lloyd's over the manner in which declarations have been made on open covers for some time past. It would seem that many shippers and merchants have taken out covers, and made declarations on them from time to time, while, at their convenience they have made use of the open market to effect insurances when it suited their convenience. Thus, a declaration would be made on a cover when the market rate on similar risks was high, but should

Open Covers at Lloyd's.

the next consignment of goods find the market doing business at a rate lower than that paid on the cover, a separate insurance would be effected at the lower rate, and no declaration made on the cover. This, on the face of it, is a questionable proceeding, and it is hard to find an excuse for it. The security offered by an open cover, on which goods can be declared after a vessel has sailed, is a benefaction which deserves better treatment, and underwriters are beginning to adopt a very firm standpoint on this subject. The remedy is a hard problem, and a closely-worded warranty will have to be devised to deal with it. Even then it will be difficult to restrain the unprincipled, who wish to take advantage of the market on this point. It has been suggested that a careful note taken by the underwriters, of the accounts for which they write covers, will assist in checking this undesirable practice, but, at the best, there would still be isolated cases which would slip through unnoticed. The proper way to deal with the matter is to warrant all covers to receive all declarations on voyages made which are included in their scope, and to repudiate all claims made when it can be proved that the warranty has not been complied with.

Insuring Converted Sailing Vessels.

There have recently been a few risks showing in the marine insurance market on sailing vessels which have been converted into steamers. From the facts placed before underwriters, it is evident that considerable structural alterations have been made, large sums of money having been expended on these. The alterations have been made with a view to obtaining the highest possible classification either in Lloyd's Register or in the British Corporation. Unfortunately, underwriters as a body are insufficiently acquainted with the details of ship construction to appreciate the exact nature of the change that has been carried out. That they have implicit faith in the classification goes without saying, but above and beyond this, they require to be satisfied that a vessel built for propulsion by sails is entirely suitable for the adoption of machinery. Their experience of changes resembling these has been unfortunate in the past; to quote an instance, the Lake steamers altered for transatlantic trade having been a source of considerable loss to the insurance market. It is, therefore, not surprising that these converted sailing vessels are viewed with a certain amount of distrust on the part of underwriters, and the rates which are being asked for their insurance are high. It is to be hoped that in the course of time the vessels in question will prove by their records to be as good a risk in their converted state as they were under sail, but until this is proved, underwriters are not likely to abate their estimation of the risk without very good cause being shown.

War-Profits Tax in Holland.

An owner who loses an insured vessel, which was written down to a reasonable book value in times of peace and is now insured according to present values, naturally realises a large profit on the book value of the vessel. This profit is, however, only apparent if the owner wishes to replace the lost vessel, for he will then have to pay more than the amount of the insurance payment, much as the latter exceeds the book value. The injustice of taxing the "profit" on insurance claims, when the owner intends to replace the vessel at an early date, finds recognition in the new Dutch law applying to the owners of general merchant shipping and of fishing vessels. Under this law it is provided that exemption from war profit tax on insurance "profits" be granted if the amount by which the insurance value of the ship exceeds the book value, together with an addition of 20 per cent., be deposited with a bank. The bank is bound not to pay out such deposits without the consent of the shipping inspector, and the deposit is forfeit to the State if a vessel at least equal in value to the lost vessel is not purchased or laid down, at the latest, within a year from the end of the war. If, on the other hand, a vessel be replaced, the difference between its book value and its value when lost is, like the book value itself, exempt from profit tax. If the replacement vessel costs less than the value of the lost vessel, the tax-exemption applies only to the difference between the price of the new vessel and its peace value.

The Shipowner's Way.

Shipowners, especially those who are in the liner business, are now fairly entitled to argue that if, instead of embarking on its standard ship enterprise, the Government had devoted the improved shipbuilding facilities to the execution of ordinary orders, the tonnage position could not have been worse, and probably would have been much better, than it is. So poor, indeed, are the results to date of the State's policy that public opinion would almost approve a proposal to give a considerable number of private orders priority after the standard ships which are in progress are launched. How far the idea could be carried out would depend, of course, on the extent to which the steel factories, shipyards, and engine shops have been reorganised in sympathy with the State plan of standardisation. Its success or failure would also be very largely determined by the attitude adopted by the State's controllers of both shipbuilding and shipping. But if the proposal were adopted the Admiralty and the Ministry of Shipping would presumably allow the shipowners and shipbuilders to construct the kinds of ships they deem to be necessary in the ways they know from experience to be the right ways. For the standard ship programme's failure to materialise the traditional point of view of the Admiralty expert is probably most to blame. With technical men in control who are also men of business the position, measured by tonnage output, would be very greatly improved. And it is tonnage output the Allies need.

South Africa's Meat Export Trade.

We hear that when conditions in the shipyards are favourable, the Union-Castle Company is to place contracts for the construction of a large number of steamers, with ample refrigerated space for the carriage from the Cape of chilled and frozen meat, as well as other perishable commodities, such as fruit. Since Sir Owen Philipps voluntarily agreed to the insertion in the existing mail contract of a clause providing for the free transport of pedigree stock from the United Kingdom to the Union of South Africa, a great impetus has been given to the cattle-rearing industry, the effect of which has been increasingly shown in the expanding export of meat. As a matter of fact, South Africa imported in 1912 large quantities of meat, but four years later actually exported £360,000 worth, so that very soon the pastoralists of Australia, New Zealand and South America are almost certain to have formidable competition. In fact, everything now points to an enormous development of this trade in the sub-Continent within the next few years. Consignments which have reached this country have created an exceptionally favourable impression in the market here, and effective steps are being taken to stimulate enterprise. Already there are good cold storage facilities at Johannesburg, Pretoria, and other inland centres, and provision has been made for the erection of freezing and chilling works and abattoirs at Durban, Port Elizabeth, and Lourenço Marques, though at present operations are suspended owing to the difficulty in obtaining materials.

Trade of Pacific Islands.

For many years the trade of the islands in the South Seas has received a good deal of attention in Australasia, though before the war much of the development work was done by German and Dutch shipping companies, the Norddeutscher Lloyd in particular, whose annual subsidy of about £200,000 for a service to and from New Guinea, Kaiser Wilhelmsland, and all the important parts of what was then known as the Bismarck Archipelago, was renewed for two years. At that time, in fact,

large quantities of copra and fertilisers were shipped direct to Bremen, and since then the United States has taken an even larger portion. Of late, however, the question of facilities has been discussed in the New Zealand Parliament with a view to assistance from the Government, but, apparently, nothing substantial can be done until the conclusion of peace, when the situation will be reviewed. Incidentally, it may be mentioned that any proposal to give back to Germany her former possessions in the South Pacific will be strenuously opposed in the Commonwealth as well as in New Zealand, and it is, therefore, much to be hoped that the Imperial authorities will not repeat the blunder of 1889, when Samoa was ceded to Germany even against the expressed wishes of the natives, apart altogether from Australasian opinion. As regards traffic prospects, most of the islands, which cover an area of about 150,000 square miles, are very fertile, and New Zealand firms are confident that, with State encouragement, a big expansion in exports and imports are certain. The Panama Canal has, moreover, brought the islands closer to the United States and Europe, whilst Japan also has ambitions in this direction.

A.S.E. and Man-Power.

A considerable number of members of the Amalgamated Society of Engineers is obviously a little unhappy at the position into which their organisation has drifted on the Man-Power question. Their uneasiness of mind is plainly shown by their disinclination to discuss the matter. From them, therefore, Mr. Young, the General Secretary, need expect no thanks for the blunt way in which he states the A.S.E. case in a recent official publication. Engineers did not agree to dilution, he says, in order that unskilled and semi-skilled men should do their work, but in order that unskilled and semi-skilled men should assist them to give the greater output which the State required. The helpers should, therefore, in Mr. Young's opinion, be taken first for military service. "Then," he adds, "if the necessary work decreases, or more fit men are needed, it will be our turn to fight the foe." From the point of view of the A.S.E. man who does not wish to serve, the argument is, no doubt, sound. But from the point of view of the community as a whole it is not, and it would not be just to refrain from saying so. Under the constitution A.S.E. members have no privileges which are denied to dilutees, and neither Mr. Young nor anybody else has a right to demand that a semi-skilled man of say, 32 or 33, shall be taken for the Army and a skilled man of 22 or 23 be left. The right to select belongs to the State, whose only obligation is to see that the Army gets the maximum of fitness and the munitions shop the maximum of productive capacity.

Too Many Authorities.

At first sight, the proposal made to the Prime Minister by the shipbuilding employers and trade unionists no doubt appears to be different from that which we put forward in our issue of last week. But in essence they are really the same. Masters and men desire to centralise authority in labour affairs by associating a joint committee of their number with the Ministry of National Service for certain purposes and with the Ministry of Labour for certain other purposes. In that way the bad effects of the interferences of a multiplicity of authorities would be avoided. It is quite a good plan, so far as it goes, and, if it had been adopted, there would to-day have been a great deal less to complain about in British mercantile shipbuilding's war record. But from the national point of view it does not go far enough—unless, of course, the idea is similarly to organise and link up all the other war industries with the two departments named—for many other interests temporarily exerting themselves in the common cause are in need of labour supplies and also suffer greatly from the effects of overlapping authority. Strictly speaking, the only difference between the two proposals is that ours goes further. We are agreed that the multiplicity of authorities which exists is bad for efficiency, and that if it is persisted in there will be grave trouble, not only in respect of merchant shipbuilding, but in respect of practically all the other war industries.

American Shipbuilding.

Reports coming across the Atlantic continue to place a better aspect on the shipbuilding position in the United States, and to show that, despite preliminary disappointments, America will soon be adding a large amount of tonnage to the Allied shipping resources. Mr. Hurley, the chairman of the Shipping Board, in an interview with the correspondent of *The Times*, pointed out that when she entered the war the United States had only 160 slipways, which, in 1915, had produced less than 200,000 tons of shipping, 70 per cent. of the output of the older and larger yards being for the Navy. While the amount of space devoted to Navy work still represents about the same proportion to-day, America has 416 slipways from which steel ships can be launched. Mr. Hurley is also more than satisfied with the present labour situation. Last October only about 100,000 men were working in American shipyards, the number now exceeds 250,000, and about 1,000 men are being added to the force every day. Experiments in labour-saving methods of construction are being carried out with most promising results, especially the experiments in electric welding, which, if successful on a large scale, will do away with riveting, except for such positions as are inaccessible to the electric welding apparatus. Mr. Hurley is now confident that this year the United States will place at least 3,500,000 tons of shipping in service.

Large Concrete Vessels.

We publish on page 311 *et seq.* the first portion of a paper on ferro-concrete ships, recently read before the North-East Coast Institution of Engineers and Shipbuilders, by M. T. J. Gueritte, who is a member of the French Society of Civil Engineers, and a councillor of the French Board of Trade. M. Gueritte has had a great deal of practical experience with the various ferro-concrete barges and tugs which have been and are being built to the order of the French Government, and his views upon the important subject of ferro-concrete vessels gain in weight as a result of the practical experience which has helped to mould them. At the time when the paper was written, barges of 1,000 tons were the biggest units constructed of this material which had been launched. The American Shipping Board has, however, officially announced the launch of a ferro-concrete ship having a deadweight capacity of 5,000 tons. This vessel, which has been christened the *Faith*, is 320 ft. long, 44½ ft. beam, with a draught of 30 ft., and will have a speed of 10 knots. It is reported that the launch was so successful that the engineers who had planned to tow the hull out to sea to test its powers of resistance under sea conditions, decided to instal the engines immediately, and place the ship in commission immediately she is fitted out. This vessel marks a very large increase on anything which has previously been built of ferro-concrete, and its future performances will doubtless be watched with great interest.

"Highly Standardised" Standard Ships.

A few weeks ago we referred in these columns to the fact that the National yards are to be used for the construction of a more highly-standardised ship than has yet been undertaken. It is understood that the principal feature of design of this type of ship is the elimination of curvature in section. It was suggested, in the House, that this design was the work of one who formerly had experience in "cross-Channel barges" only, but we are now in a position to divulge the name of the originator of the form and system of construction which has been adopted by the Government for the new standard ships. Mr. Thomas Graham, B.Sc., who read an interesting paper last year before the Institution of Naval Architects on

"Apparatus for Interpreting Stability," and who is at present a temporary member of the R.C.N.C., is responsible for the original design. Mr. Graham submitted his plans to Sir Eustace D'Eyncourt who at once appreciated the advantages accruing from the type of construction suggested. In collaboration, Sir Eustace and Mr. Graham further developed the original idea. The advice of experts on ship's forms was obtained, and ultimately a form was evolved, the efficiency of which, from the purely propulsive standpoint, was vindicated in the most remarkable manner by model experiment, while, at the same time, none of the structural simplicity which was the prime object of Mr. Graham's original proposal had to be surrendered. This became the "parent" form of the "National ship." The novelty of the design, involving as it did radical departures from existing practice for vessels of this size, was not accepted without a thorough and complete examination by some of the leading authorities and the classification societies. Mr. Graham received his training as a naval architect at Clydebank, and is a graduate of Glasgow University.

SHIPBUILDING OUTPUT.

PROBABLY the interpellations in Parliament regarding the disappointing output of merchant ships will in the ultimate result have a salutary effect. They emphasise inherent dangers. The February figure of 100,038 tons, although a very considerable improvement on January, still leaves exceedingly large leeway to make up. Unless the March output rises to 200,000 tons, the forecast for the quarter will not be reached. A most alarming and melancholy pass would be presented. It is time for well-ordered action rather than for recrimination, and the recognition of the need for action and concentration underlies the appointments in connection with shipbuilding last week. Colonel James Lithgow, who takes over the control of mercantile shipbuilding—hulls and machinery—in private yards, possesses excellent qualities as a skilled and experienced shipbuilder, whose organising ability is supplemented by a grasp of practical detail. Sir Thomas Bell is allocated to the department of ship repairing and construction of auxiliary vessels for the Navy, which he is well fitted to direct. General Collard will devote himself to the development of national yards, and, it will be interesting to watch how this experiment progresses. This redistribution of functions is we hope an outward and visible sign of a determination to use all energetic measures to improve the situation. The Press reports that the First Lord of the Admiralty has taken into consultation that great shipbuilder Lord Pirrie, and indeed it has speculated on his appointment to a position in which he would completely supervise the whole field of merchant shipbuilding on the same lines as Sir Joseph Maclay, with a steadily growing reputation in supervising the actual employment of ships. We shall learn more of the situation in the approaching speech of Sir Eric Geddes in the House of Commons, which will be made just after we go to press.

In dealing with the shipbuilding situation the line of most fruitful advance is to recognise in the errors of the past a warning against pitfalls in future. Sir Eric Geddes has attributed blame to employers and labour, and they have had something to say in reply. We have rigorously condemned the near-sighted truculence of labour when by the rigidity of its rules or the unreasonableness of its demands it has interposed obstacles in the way of output. There is no use palliating this aspect of the question. Yet there is reality in the picture which Mr. Mackinder presented in the House of Commons last week, of the depressing effects on both employers and workmen exercised by the frequent alterations in the design of ships under construction. Men, he submitted, will not throw their fullest energy into doing work to-day which to-morrow may be pulled down. The imperative exigencies imposed by war conditions excepted, the less changing of this kind the better, and it is just this indecision which the influence of a practical shipbuilder like Colonel Lithgow will tend to check.

It is pretty evident also that Parliament is disturbed by the slowness of output of standard ships. Its original anticipations, founded perhaps on the confident speeches of the Prime Minister, were disappointed in the concluding months of last year, and events have intensified the disappointment. The 86,000 tons of completed standard ships constitute a mere fraction of the total programme of which Sir Eric Geddes spoke last year. Looking at events as they present themselves to-day, the evidence leans strongly in support of the contention that private yards left free to repeat their own special types of ships would have, up till now, given far better results in output. State control laying its autocratic hand too heavily on a complex and highly specialised industry like shipbuilding deprives it of much of the compelling energy of private enterprise. Nevertheless the question of reversing a deliberately undertaken policy on which elaborate preparations have been made for the supply of materials lies for the moment outside the bounds of feasibility. The most dangerous element we have to guard against is delay. The most vital need of the nation is mercantile ships, and the output would suffer at the time when we need them most, if any preparations for material were rendered futile.

Any obstacle, either in the nature of official control or otherwise, which is interposed between the shipbuilder and his supreme task of producing ships rapidly, must be eliminated with ruthless hand. All the Government departments must be made to sacrifice their susceptibilities in furthering the accomplishment of this great end of national endeavour. For instance, we may cite the release of skilled men from the colours for the shipyards. It is proceeding at none too rapid a rate. Mr. Bonar Law, in rather an apologetic tone, indicated in the House of Commons the reluctance of commanding officers to part with some of their best men. The sentiment is quite explicable, but it ought to be made to bend before the greater national need. Priority must be given to mercantile construction, and on this point we cannot pass over in silence some observations made in the course of debate on Thursday by Mr. Alexander Shaw, M.P. Neither his temperament nor his associations would lead him to unbalanced assertion. He presented to the House of Commons a rough estimate that some 70 per cent. of the men and materials of the shipyards is devoted to naval construction, and that at a time when the American Fleet is joined to ours. In this we take it that he sees a reversal of the policy of priority for merchant ships. The point seems to be one for the War Cabinet to investigate.

When all is said and done, a great moral stimulus is undoubtedly required in the shipyards. The impending danger is slackness. That tendency in our view can be lessened by telling frankly to all engaged in the industry the extent of our losses measured in terms which they can readily comprehend. The reasons now for the publication of the figures in actual tonnage of the ships which we have lost in the war are becoming more manifest than ever. Mr. Bonar Law has hinted at the possibility that Sir Eric Geddes may find himself in a position to give them this week. Frankness and efficiency above generate confidence and resolution below, and there is no doubt that our ability to build ships rapidly is to prove one of the greatest tests of our power to achieve victory.

SHIPBUILDING IN AUSTRALIA.

WE have frequently had occasion to draw attention in these columns to the fact that one of the most important results of the war from the shipbuilder's point of view, is the development of the shipbuilding industry in countries which hitherto were content to purchase ships from one or other of the great shipbuilding countries —Great Britain or Germany—who now find themselves compelled to consider the problem of developing their own shipbuilding resources. This they may do as neutral nations from a desire to satisfy their

own legitimate need for tonnage, or else, forming one of the great Alliance of Nations, whose Navies command the seven seas, they seek to add to the "ships and still more ships," which are such a pressing necessity to the success of the Allied cause. In the former category we must place such countries as Holland, Norway and Spain, all of whom have considerably developed their shipbuilding resources during the last three years, and who have built ships, both with regard to size and to numbers in a degree which would have appeared incredible before the war. Among the latter category of nations, first and foremost comes the United States, the magnitude of whose effort forms so striking a testimony to the enthusiasm with which she has thrown herself into the Allied cause; while Japan may also be mentioned as having developed her shipbuilding industry during the period of the war to an extent which certainly was not contemplated in the pre-war days.

In rather a different category to either the neutral or Allied shipbuilding development must be placed the remarkable developments which are taking place in the Colonies of the Empire, more particularly in Canada. India, too, is seeking to play a part in the great world-shipbuilding effort, and lastly, Australia may be mentioned as putting forth a great effort to solve the problem of the shortage of tonnage. In almost every country to which reference has been made, the two great factors which limit the output of ships is shortage of steel and shortage of labour. Only those countries which can manufacture steel in large quantities can ever hope to be in a position to turn out large numbers of ships, and even when steel is available, there is always the labour which is needed to work it into the hulls. Though natural resources of both may be abundant—as in India, for example—it takes many years before either can be developed to satisfy the needs of a large shipbuilding programme. With regard to Australia, the position is not quite the same. Immense quantities of rich iron ore and of coal exist within the continent, but, unlike India, where there is a large native population which is available to satisfy the largest demand for labour, in Australia almost every industry is crippled by the fact that sufficient labour is not available, and that what labour there is, is only available at a very high rate of wages. Thus, the question of developing the steel supply and also of developing the shipbuilding industry in Australia is largely a question of labour. The shortage of tonnage has, however, led to the accumulation of vast quantities of foodstuffs in the continent. It is estimated that 165,000,000 bushels of the 1915-17 wheat harvests still remain in Australia, which on a basis of 5,000 tons per ship, represent 900 shiploads, which would have to be exported before the next harvest in order to clear out the stocks. This led the Prime Minister, Mr. Hughes, to investigate the possibility of constructing large ocean-going cargo vessels in Australia. In September last, the Federal Ministry finally decided to build merchant ships, and an initial programme for the construction of six standard steamers has already been started.

A writer in *The Times* recently gave some very interesting particulars of the steps which have already been taken to realise this programme. Australia, he says, is a reservoir of all the raw material necessary for shipbuilding. Its huge deposits of iron ore are among the richest in the world. In Great Britain and Germany it takes 2·4 tons of iron ore to yield 1 ton of pig-iron; in France and Belgium, 2·7 tons are needed to give the same result; but in Australia only 1·5 tons of the famous Iron Knob ore are necessary to produce 1 ton of pig-iron. An expert report supplied to the Australian Interstate Commission stated that there can be assembled at Newcastle the iron ore, coke, and limestone necessary for pig-iron production at a lower cost per unit than is possible for the United States Steel Corporation, the largest and cheapest producer in that country. The coalfields already being worked are of large size and yield the best quality of fuel. In spite of all the natural advantages in the shape of raw material, it should be remembered that shipbuilding is an entirely new departure for Australia, and it demanded extensive industrial mobilisation. Mr. Hughes's first step was to hold a conference with the Labour Unions, as a result of which agreement was reached upon the three points deemed essential to the success of the scheme. These points were:—(1) Continuity of operations; (2) dilution of labour; and (3) piece-work. A satisfactory number of highly-skilled artisans was secured, and, having secured the staffs and the co-operation of the Unions, the Government sought, among the shipyards of Great Britain, half-a-dozen leading ship constructors to direct the work. These men included a ship constructor, a yards manager, chief draughtsman, and chief marine engineer. It was found that there were in Australia a number of slipways for small vessels which, without much trouble, were capable of expansion, and the alterations necessary were pushed forward at the maximum speed. The programme for the construction of six vessels makes provision for the work to be carried on in Melbourne, Sydney, Newcastle, and Queensland.

It is interesting to note that within five months of the decision to build ships in Australia, the work was begun. Unconventional methods have been adopted in order that the work may be pushed forward with the utmost celerity, and the first vessel, it is hoped, will be launched during the present year.

THE MAXIMUM DIMENSIONS OF SHIPS.

WHILST the war has completely stopped the construction of large merchant vessels the evidence of finality has not yet been reached in point of size is given by the dimensions of the large battle cruisers being built by the United States. These vessels are 874 ft. in over-all length, displace 35,000 tons, and are expected to steam at 35 knots. This attainment in size has been reached in order to meet the demands for greater gun power, protection and speed. It is most unlikely that on the mercantile side of shipbuilding the requirements of commerce have been fully met by past types of ships, and the call for still greater accommodation and speed will yet bring into existence vessels which will eclipse anything so far produced.

A matter of 20 years ago it was thought by some able naval architects that the maximum had even then been attained. The limiting factor, in these days, was draught of water available at the terminal ports, and this limit imposed an architectural limitation upon all the other dimensions. The cost of deepening the harbours of seaports was considered to be so extravagant that the thought of such expenditure would never be entertained. Mr. Charles Cramp, one of the noted American shipbuilders, thought it not worth while to consider the contingency of vessels 700 ft. in length. Yet such a length was exceeded within comparatively few years after his opinion was expressed. Another factor which, it was argued, seemed to set some limit to practicable size, was that a ship might become too large for a captain to manage. It has been proved that the mind of man can become quite accustomed to the management of the mammoth liners as they are evolved.

When Mr. Cramp gave the opinion above mentioned the depth of water available at the terminal ports was about 30 ft. This has been increased until now the large liners can safely leave drawing 35 ft. The maximum depth meantime contemplated is 40 ft. of water at low tide, and, should this be accomplished, there should be no barrier, from the point of view of available depth, to the 1,000 ft. merchant ship becoming an accomplished fact. The probability of vessels of this length being produced is accepted, and provision is being made in dry docks and canal locks for the accommodation of these ships.

The capabilities of shipyards adjusted themselves to the building of vessels of about 50,000 tons gross. Difficulties in construction were met with which were unknown in connection with ships of smaller size, but these were successfully overcome. One of the most serious difficulties is connected with the human element and its

limitation of power. The plates now being used demand rivets of such length and diameter to effectively unite them that the work of riveting requires the utmost physical exertion. It must not be supposed that this in itself will limit the size of ships, as mechanical methods of riveting can doubtless be found to undertake the portions which may be beyond the capabilities of hand riveting.

The probability of larger merchant ships being built depends on the prospects which owners have of making the running of this a commercial success. To all appearances owners are anxious to prove the capabilities of the large vessels of about 850 ft. in length before embarking on any greater undertakings. The *Olympic, Titanic, Aquitania, Britannic, Imperator,* and *Vaterland* were all practically of the same dimensions. These leviathans followed the *Lusitania* and *Mauretania* of 100 ft. less in length. Thus it appears that owners could anticipate a reasonable return on their money when invested in such craft, but the certainty of reaping a harvest from the construction of vessels, say, 100 ft. longer than the *Aquitania* is not yet known.

Whilst the limit of size in liners is dependent to a great extent on the prospects of commercial success, no such considerations enter into play when large warships are being designed. In the latter various factors are balanced, and satisfied as well as can be, in the design. Thus a battle cruiser must have great offensive and defensive power and high speed. A few years ago these needs were satisfied on a length of about 550 ft. and 18,000 tons displacement. The call for guns of heavier calibre and a greater number of them; for heavier armour, and, most important of all, for higher speeds, has caused the length to be increased by 300 ft. and the displacement to be doubled. It is doubtful whether even this advance will be final, and, if the march of progress in the next decade is as definite as it has been in that now past, we are within measurable distance of the 1,000 ft. cruiser, of probably 40 knots speed, and of about 400,000 h.p. It is a dangerous thing to prophecy, as so many prophecies have been falsified, especially when these have foretold a return to ships of smaller dimensions.

Some differences of opinion have been expressed as to what are the most desirable dimensions of ships. Sir William White was a strong advocate of the return to smaller ships, whilst Mr. Owens-Thurston considered that a battleship mounting eight 14-in. guns, of 25,500 tons displacement and of 21½ knots speed, possessed all the fighting qualities necessary. On the other hand, Naval Constructor Gatewood, of the U.S. Navy, considered that it was impossible to adequately fulfil the requirements necessary on a displacement less than 36,000 tons. The latest concrete expression of opinion is the great battle cruisers now building, which eclipse anything yet produced. It is undoubtedly the case that the most desirable design will change with each advance in gun power, and every improvement in machinery which will be evolved.

The most desirable merchant ship is that which will give the best return to owners. Sir John Biles has shown that increase in size leads to economy of transit. The available depth in harbours meantime limits the size possible, and ships are designed to suit the ports of call. It is well known that the express Cunarders proved a veritable gold mine to the Cunard Company, and the *Aquitania* was designed with the object of giving as good a return to its owners without a subsidy, as the *Lusitania* and *Mauretania* did with one.

If, then, the commercial success of still greater ships is possible, the construction of such, when the war is over, is more than probable.

PUBLICATIONS RECEIVED.

[A short notice of any publication does not necessarily preclude the subsequent appearance of a longer review.]

The Strength of Ships. By J. Bertram Thomas, A.M.Inst.C.E. London: Scott, Greenwood & Son, 8, Broadway, Ludgate, E.C. 4. 4¾ in. × 7⅞ in. × ⅝ in. 290 pp. with 114 diagrams and 31 tables. Cloth, 5s. net.

Terms of Industrial Peace. Second edition. By Alex. Ramsay. London: Constable & Co., Ltd., 10, Orange Street, W.C. 2. 5⅛ in. × 7¼ in. × ⅞ in. 141 pp. Cloth, 3s. net.

The Channel. A Clyde Shipbuilding, Engineering and Electrical Gazette. Vol. 1. No. 6. Published bi-monthly at 18, Campbell Street, Greenock. 9½ in. × 7½ in. xxxii. + 36 pp. With 4 pp. index. Price 6d.

We have received a current copy of this bi-monthly journal, which completes the first year of its existence, and those responsible for its publication feel that they have gone some way to fulfil the mission which they had in view at its inception, and the contents of the issue we have before us certainly justify the conclusion that it is a useful and interesting journal. The articles on a variety of technical subjects and the papers read before engineers and shipbuilders are of a valuable order and furnished with diagrams and well-printed illustrations. It is desired that advantage should be freely taken of the technical query column, as it is claimed to be a feature of real educational value, with which we quite agree.

LETTERS TO THE EDITOR.

[The Editor does not hold himself responsible for opinions expressed by Correspondents.]

THE DIRECTORSHIP OF AUXILIARY SHIPS' ENGINES.

Queen Anne Mansions, St. James's Park,
March 16, 1918.

TO THE EDITOR OF SHIPBUILDING AND SHIPPING RECORD.

The answer given in the House of Commons, on March 12, by Dr. Macnamara to a question put to him by Mr. Mackinder, inquiring the reasons for my resignation from the post of Director of Auxiliary Ships' Engines under General Collard deserves notice.

I draw attention to it, not because of my personal connection with it, but because it seems to me to emphasise the inadequacy of the recognition that has been given to merchant shipbuilding since it fell under the control of the Admiralty.

Dr. Macnamara suggests that the rearrangement whereby Colonel Lithgow becomes responsible both for merchant hulls and ships' engines was made with the desire to avoid any hiatus between the production of hulls and engines respectively. The reason assigned to me by the Controller of the Navy after the rearrangement had been made and confirmed in his letter to me of February 18, accepting my resignation, was that the work of the D.C.A.S. had recently increased so much and in so many diverse directions that the First Lord and the Controller had come to the conclusion that they must do what they could to relieve General Collard of some of the distracting calls upon his time and attention. One of the essential steps for this purpose was to give him an assistant who would act for him in the whole business of merchant ship production, and this, in their view, involved placing both engines and hulls in the hands of the assistant. The final responsibility for merchant ship production rests, I presume, with the First Lord of the Admiralty. He has, of course, many other duties and delegates the oversight of production of all kinds to the Controller of the Navy, who in turn delegates the control of auxiliary ships (including merchant ships) to the Deputy Controller of Auxiliary Shipbuilding. The Deputy Controller in turn delegates the "whole business of merchant ship production" to an assistant. Colonel Lithgow in turn would no doubt desire to delegate the engine department of the business to someone having a knowledge of marine engineering, he himself having been a hull builder only and never having had any experience at all either of the business or practical side of engineering. To my mind, nothing could be more conclusive than this process of delegation that merchant ship production has not received from the Admiralty the important recognition which the whole country is now made aware it should have had as a primary element in winning the war. I whole-heartedly support the appointment of a Minister of Merchant Shipbuilding, especially as I have had experience of the cogs in the wheel which sub-departmental routine involves. I am unquestionably of opinion that no other course will give the production which is necessary.

WM. ROWAN THOMSON.

FERRO-CONCRETE SHIPS.*

It was the author's privilege to deliver a paper entitled "Ferro-Concrete as applied to Floating Structures" in the year 1909. The conclusions of that paper ran as follows:—"The particulars and illustrations given seem sufficient to indicate that ferro-concrete has to be taken into account as a ship building material, owing to its small initial cost and the absence of upkeep. The author is far from thinking that super-dreadnoughts are likely to be built in ferro-concrete, at any rate for the present, but in smaller and commercial craft and for special purposes he is convinced that it will be used more and more. The question of weight is not so paramount as it may seem at first when to the weight of the hull is added that of all fittings and cargo, which remain the same both for ferro-concrete and for steel ships." The recent strides made in this mode of construction seem to justify those prognostics.

We shall consider in turn the two components of a ferro-concrete hull, viz., concrete and steel.

Concrete.

The *concrete* employed must be non-porous, so as to prevent leaking and the steel being attacked by sea water, it must also be strong so as to resist the heavy compressive stresses to which, in parts, it is submitted, and it should be as light as possible. The last named condition is unfortunately difficult to fulfil at the same time as the other two, and the latter are of greater importance. Light *aggregates*, such as pumice stone, ashes, coke breeze, which are used in land work for making light concrete, are too porous, they would absorb a large weight of water and would give too weak a concrete; they cannot be utilised for ships. Clean shingle, of a flinty nature, is a suitable material, and would give a concrete slightly lighter in weight than crushed granite or whinstone. Gravel originating from sandstone must be subject to careful scrutiny before being allowed for ship construction, as it is sometimes of a somewhat porous and friable nature and might prove a source of weakness both as regards porosity and crushing strength. Crushed granite and, generally speaking, crushed stone of a hard and impervious nature, are perhaps to be given the preference, notwithstanding their somewhat heavier weight. The same physical qualities are essential for the *sand*. Of the *cement* itself, little need be said, years of experience have proved that if it is up to British Standard Specification it will prove suitable for sea work.

With such constituents and it being understood that fresh water only should be used both for making the concrete and washing the aggregate if necessary, a suitable concrete will be made if proper proportions are adopted and the materials are properly mixed. In determining proportions great care should be taken that the aggregate be properly graded, that is, it should contain stones of various sizes, the smaller ones helping to fill the voids between the larger, and the same applies to the sand, which should be a mixture of sharp particles and of finer sand going down almost to dust. The proportions of voids both in the aggregate and in the sand should be carefully determined, and there should be a good excess of cement paste over the quantity strictly required to fill the voids in the sand, and similarly a good excess of mortar (*i.e.*, sand and cement paste) over that required to fill the voids in the aggregate. As previously mentioned, crushed stone will be used often as an aggregate, and it so happens that it contains as a rule a considerably greater proportion of voids than shingle, and this may result in porousness in the concrete unless proper attention is paid. This question of voids and of porousness is of very great importance, but forms in itself a vast subject. The author had the opportunity of reading a paper quite recently before the Society of Engineers on this subject, to which he would refer those interested; but it appears to him that its importance is such that it should be particularly emphasised to-night when dealing with concrete for ship construction.

From practical considerations the author does not deem it advisable to allow for a lesser thickness of concrete than 3 in. for the sides and bottom of a vessel, except in special circumstances, and however much one might like to see it reduced so as to lighten the structure. The figure of 2·8 in. is mentioned as a minimum in the preliminary rules for ferro-concrete ships issued by the Danish Government, but except for very small craft 3 in. will prove in practice to be the minimum. The scantlings of frames, stringers, &c., are also reduced as much as possible owing to the same desire to reduce the weight, and the thickness may be taken at $2\frac{1}{2}$ in. and even less in some cases, but great care will have to be exercised to insure proper covering of the bars by the concrete and proper bond between them. It is therefore necessary to use an aggregate of small size, which will be worked easily in so restricted a space and among a comparatively great number of steel rods. Some engineers went as far as to suggest the total abandonment of aggregate, and the replacement of concrete by a mere sand and cement mortar. But the method has been proved to be unsatisfactory in ordinary ferro-concrete work, and the same would apply to ship construction. A happy medium is to be recommended, and the author's firm have ultimately adopted the following mixture for their designs:—

Aggregate, being a well graded mixture of stones from $\frac{5}{8}$ inch size down to $\frac{1}{4}$ inch and free from sand, 27 cubic feet.

Sand, from $\frac{1}{8}$ inch downward, the grains being also of well graded sizes, $13\frac{1}{2}$ cubic ft.

Cement, $8\frac{1}{2}$ cwt.

Such a concrete may be termed a 1.6 : 2 : 4 concrete.

The above proportions apply as long as the percentage of voids in the aggregate does not exceed 50 per cent. If it exceeds 50 per cent., in order to ensure an absolutely water-tight concrete, it is advisable that a corresponding quantity of sand and cement be added.

It has been suggested by various engineers that a much poorer concrete might be used with safety, say a 1 : 2 : 4 or 1.2 : 2 : 4 concrete, if a good rich rendering were applied later on the external surface of the sides and bottoms. But such a rendering would be extremely difficult to make properly, especially when nearing the bow and stern, and with the hard wear and tear to which ships are submitted it would soon come away in patches.

In order to obviate the difficulty of making a proper rendering, other engineers have suggested to use a comparatively poor concrete, say 1 : 2 : 4 or 1.2 : 2 : 4 for the inner 2 in. or 3 in. of the walls and bottom, and to place carefully at the same time in the mould a rich mortar (one of cement and one of sand) to form the external inch. The author's experience leads him to deprecate the juxtaposition of two concretes of so entirely different a richness in cement, and unless supervision of the most constant and strict nature is exercised during erection he doubts very much the efficacy of the method. All told it seems decidedly better to adopt a uniformly rich mixture, such as mentioned above, which will give a very good face to the concrete when the moulds are struck off, prove quite impervious, afford a high crushing strength, and be easily worked into the moulds.

Steel.

We now turn to the other component element of the structure, viz., the steel. The general tendency in ferro-concrete practice has been to utilize as reinforcing material mild steel in the form of ordinary round bars, with an ultimate tensile strength of from 28 tons to 32 tons per sq. in., and elastic limit varying from 30,000 lb. to 40,000 lb. per sq. in., and an elongation of at least 20 per cent. on a length of 8 times the diameter. Such steel was used in the construction of most of the numerous river and canal barges and pontoons built in ferro-concrete during the last 15 years, and it was natural to look to the same material again, when great impetus was given lately to the construction of sea craft in ferro-concrete by the difficulty of procuring all the steel plates required for commercial craft. Mild steel was therefore used and will be used in many ships

* Paper read before the North-East Coast Institution of Engineers and Shipbuilders on March 12, by T. J. Gueritte, Ing.E.C.P., M.Soc.Ing.Civ. (France), Councillor of French Board of Trade.

notwithstanding the difficulty one meets in obtaining it at present. Shell discard steel has been put forward as a substitute, mostly with the object of avoiding the use of mild steel, seeing that it is more easily obtainable than the latter at present, but not owing to its special physical properties. For the present, apparently, Lloyd's Register are not prepared to sanction its use for ferro-concrete ships. One of their surveyors, Mr. Bernard J. Ives, has stated that, "As the ferro-concrete ship is only in its experimental stage, and as practically no experience has been obtained so far from actual seagoing conditions, a wise precaution at the present time is to eliminate any doubtful factors and the steel should therefore be of the quality used in ordinary shipbuilding work."

It may be stated at the outset that the problems of ferro-concrete construction as applied to naval architecture are very different from its problems as applied to land work. Firstly, and for obvious reasons, it is desirable to reduce the weight of the hull, and consequently of all the scantlings, as much as ever possible, consistent with good work. It becomes, therefore, of great interest to use for the reinforcement steel possessing a higher elastic limit than mild steel, the elastic limit being an all-important factor in ferro-concrete work. Not only does this obviously tend to reduce the weight of steel required and consequently the weight of the hull, but also the same cover of concrete over the reinforcing rods can be maintained while reducing the thickness of the members, slingers, &c., by the same amount as the diameters of the high elastic limit steel rods are smaller than those of the mild steel bars which would otherwise be used, thus securing an indirect but very important saving in the weight of the hull.

A second point which deserves very careful consideration is that of the transmission of the stresses in the steel from bar to bar. As is well known, in ferro-concrete construction the bars are not tied together, nor welded, nor connected by coupling boxes except in very special circumstances. Stresses are transmitted from bar to bar through the agency of the adhesion grip of the concrete surrounding them, the bars overlapping each other. Their ends are usually fishtailed or hooked, with a view to helping further the adhesion. In ordinary ferro-concrete work the mass of concrete surrounding the rods is comparatively large, and there is ample room for overlapping of the rods and for the hooks or fishtails, so that most of the experts in ferro-concrete consider it quite unnecessary to use bars with mechanical bond. In ship construction, as has been previously stated, scantlings are reduced to a minimum, and the bars being very much closer together real difficulty is experienced in finding room for overlaps of the length required if ordinary round rods are used, and also for hooks, especially in longitudinal members. The problem is serious, and experiments carried out in France last year upon a river barge of 400 tons deadweight, which was purposely tested until rupture under load in the dry proved the ultimate failure to be due to the slipping of the longitudinal rods, consequent upon the insufficiency of overlapping. It must be added that the overlaps were in fact considerably shorter than sound design would have required. But the indication given must not be neglected. It therefore becomes useful for ferro-concrete ship construction to adopt bars which present a greater adhesive power than ordinary round bars. Tests have proved that certain bars are obtainable which have a grip 60 per cent. greater than that of ordinary rounds; their use will obviously reduce the amount of overlapping otherwise required. But such greater adhesion should not be obtained by the addition of sharp projections or ribs on the bars which might have a tendency to be the starting point of minute cracks in the concrete, and which, in addition, are useless from the point of view of the main stresses. In other words, the bond should be continuous, and should not entail an additional weight of steel. To sum up the question of the steel, the author has found the nearest approach to what he considers the ideal steel reinforcement for shipbuilding work in bars manufactured from mild steel in accordance with British Standard Specification for structural steel, but which, owing to their special shape and the physical treatment they receive after rolling, acquire an elastic limit of over 50,000 lb. per sq. in., as compared with from 30,000 lb. to 40,000 lb. of mild steel, present a satisfactory and continuous bond without sharp indentations or projections, and remain capable of cold bending round a bar of one-and-a-half times their diameter without injury.

(To be continued.)

SPEEDY SHIP REPAIRING AT BALBOA.

The following particulars of a ship repair job quickly carried out at Balboa are given in the official record of the Panama Canal Authorities:—

A merchant vessel of nearly 20,000 gross tons (now used as a transport) went into dry dock at Balboa on December 30 last for repairs on account of damage in two collisions, and for alterations of a general nature. On January 20 the ship was released with the work completed. The job was the quickest ever done at the canal shops. Three Sundays and a holiday were included in the time of making the repairs, and on those days as little work was done as was consistent with keeping up the pace. The items of the repairs carried out included the following:—

(1) A new stem, 60 ft. long, 14 in. deep, and 4 in. thick.

(2) A new hawse pipe of 7½ tons. This involved the cutting away of all material around the pipe, including 40 tons of cement that had been placed there for temporary repair, before the measurements could be taken and the templets made, the making of patterns, casting of the pipe, and riveting it upon the ship.

(3) Repairs to the stern.

(4) Extensive repairs to fire main and increasing the number of coaling chutes, and other alterations which would increase the coal-carrying capacity of the ship.

The force employed on the work included 450 skilled mechanics and 1,000 helpers and labourers, and the total number of hours worked was about 400.

On the completion of the job the superintendent of the mechanical division posted the following bulletin at the shops:—

"Before the departure of the . . . the commanding officer and officers expressed their admiration and appreciation of the expeditious and efficient manner in which the work of the mechanical division was performed on that vessel.

"Some word of their satisfaction must have reached the ears of the Acting Governor who has also expressed his satisfaction at the good work accomplished.

"To be able to return to the active fleet a large and useful vessel in such record time is certainly a very creditable performance and speaks well for the capacity of the mechanical division and the ability and willingness of its employees to 'do their bit' at this time.

"The showing made has been very gratifying to this office and it is desired to continue this good work in connection with coming repairs."

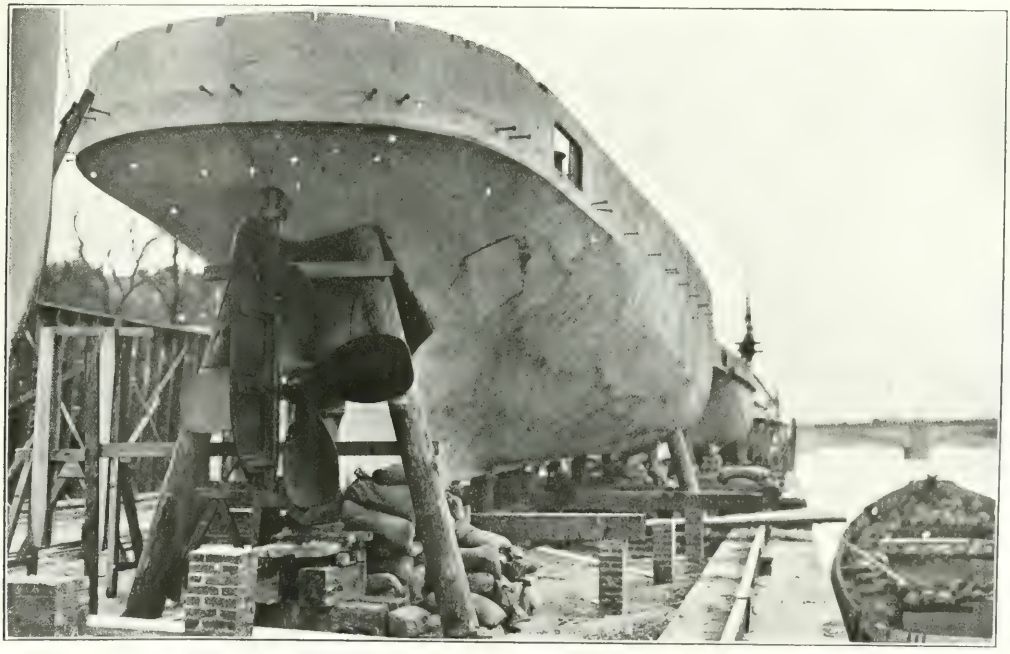
FRENCH CONCRETE SHIPS.

In our issue of March 7 we published a set of photographs illustrating the building of some reinforced concrete vessels for the French Government, the vessels being constructed to act as armed river transports. The first photographs were taken during the earlier stages of construction and gave a good idea of the methods adopted in the formation of the hull. We publish on pages 313–315 a second series of photographs illustrating the building of the same vessels, but showing them in a later stage of construction, and giving an idea of the finishing stages of the job, and also the method of launching.

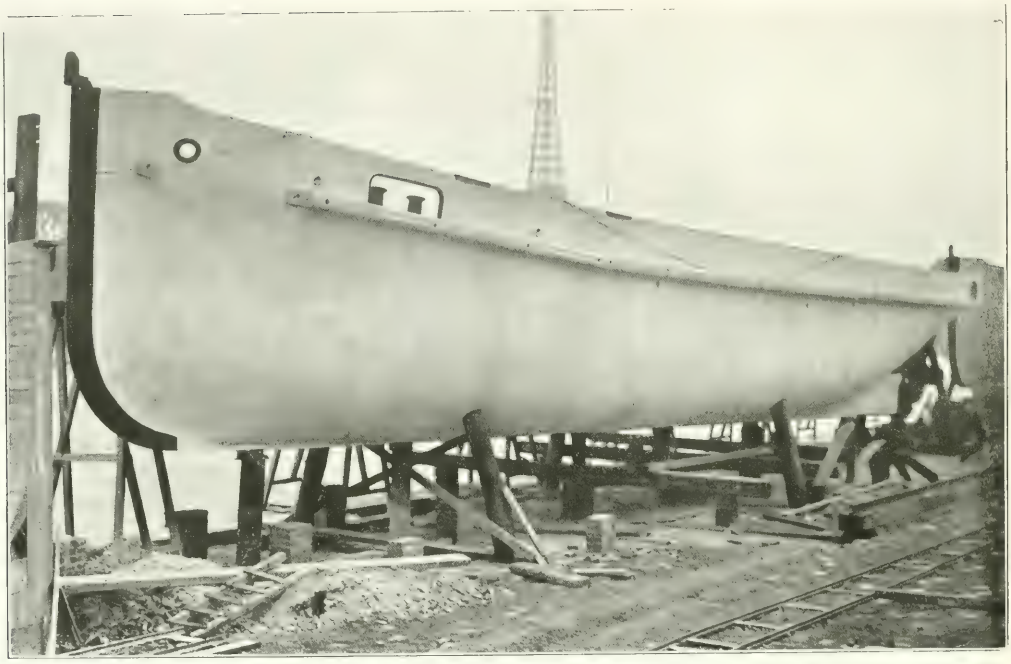
The photographs were published by the French Ministry of War for the Press Bureau of Paris, and issued in this country by the Topical Press Agency.

FRENCH CONCRETE SHIPS.

Constructing the Steel Reinforcement for the Machinery Bearers.



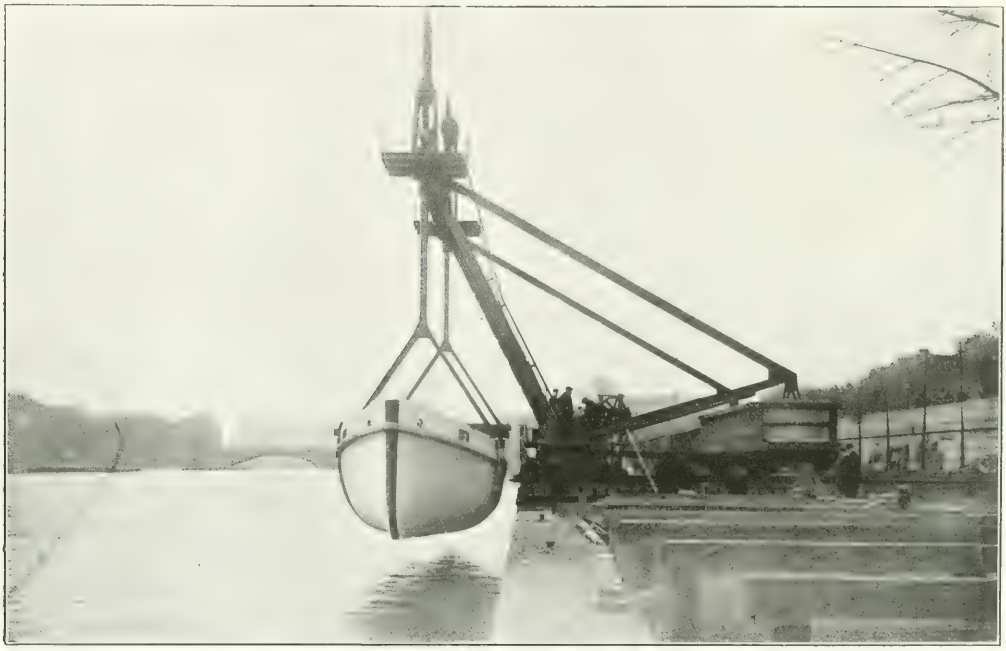
The Vessel nearly Completed. Awaiting the fitting of Wooden Rubbing Chocks.



The Completed Vessel Ready for Launching.

Vessel Slung in Crane, about to be Launched.

THE FRENCH GOVERNMENT. (*See page* 312.)



Lowering the Vessel into the Water.

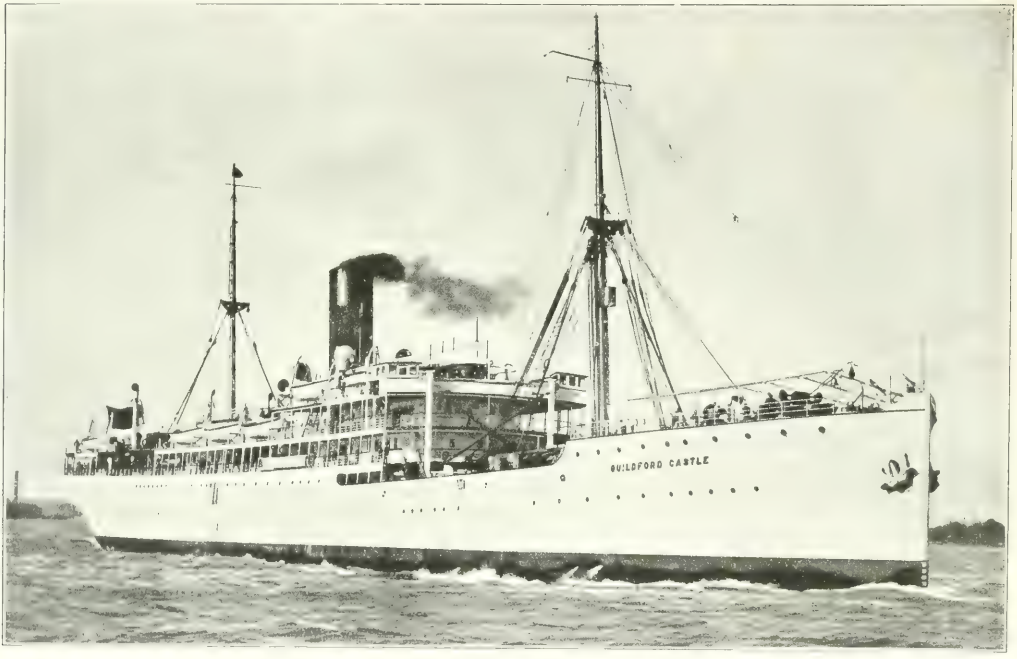
The Vessel Launched. Awaiting the Machinery.

H.M. HOSPITAL SHIP "GUILDFORD CASTLE."

The following official announcement was made last week with regard to the attempt by an enemy submarine to sink another British Red Cross ship:—

"H.M. Hospital ship *Guildford Castle* (Capt. Thomas M. Lang, R.N.R.), homeward bound, was unsuccessfully attacked by enemy submarine at the entrance to the Bristol Channel at 5.30 p.m. on March 10. She was flying her Red Cross flags, and in addition had all her hospital lights on."

This was the third attack made this year by enemy U-boats in the entrance to the Bristol Channel, and the attempt was made off Lundy Island. The vessel was on its way home from East Africa with about 450 sick and wounded on board. Two torpedoes were fired at the vessel, but the first missed its mark; the second one, however, struck with considerable force, which did not explode.



The Torpedoed Hospital Ship "Guildford Castle."

The ship was able to get into port safely without any lives being lost, and Capt. Lang stated that the discipline of the crew and the R.A.M.C., which included nurses, was splendid.

The *Guildford Castle*, an illustration of which is reproduced on this page, is a twin-screw vessel of 7,995 tons gross, and owned by the Union-Castle Mail Steamship Co., Ltd. She was built in 1911 by Barclay, Curle & Co., Ltd., of Glasgow.

Shipbuilding in Canada. It is stated that the Canadian Government is taking steps to utilise existing private plants (of which there are 11 capable of building steel ships), and have given orders for as many vessels as the yards can supply in reasonable time. These vessels will be in accordance with the latest type of standard British ships, and adapted for bulk or general cargo. The securing of the necessary ship plates and shapes is one of the greatest initial difficulties.

EFFECTS OF WAR ON MERCHANT SHIPBUILDING.

Institution of Engineers and Shipbuilders in Scotland.

At a meeting of the Institution of Engineers and Shipbuilders in Scotland, held in Glasgow on Tuesday evening, a paper on "Some Effects of War on Merchant Shipbuilding," was read by Mr. James Craig, a member of the Institution, and one of the Senior Surveyors of Lloyd's Register at Glasgow.

Mr. Craig said: Labour, it must now be recognised, is one of the important elements of industry, as much as coal, iron or steel. It is the most expensive. Anything that makes it more efficient, or cheapens or economises it, is as much a factor in production as anything that cheapens material or economises fuel, or improves the efficiency of a machine. The problem is not only how to build a ship or engine, but how to build better and more economically than before. To attain these ends skilled management, scientific investigation, improved manufacture, and the complex problems of labour must necessarily receive equal consideration. That the shipbuilding and engineering trades have been prolific in all manner of labour troubles in the past is only too well known, but he would be a bold man who, in the midst of an industrial evolution, would attempt to forecast the problem of the future in this respect. The effect of the war has been to further stimulate discussion on the wages question, and the respective interests of capital and labour, ranging from time rates, premium bonus systems, and the shop steward's position, to the extremists' demand to control all industrial establishments. Much, however, is being done now to arrive at a solution of the wages question, and the relationship between capital and labour. Not the least hopeful sign, perhaps fostered by experience of the intervention of the various authorities in the past few years, is the apparent drawing together of the interests of capital and labour with a view to the settlement of their differences

by the best of all agreements - mutual consent. Much might be said on the various schemes for the payment of wages, but since the payment for all manufactures is a system of payment by results, I venture to think that straight piece work, as it is called, coupled with a minimum wage which may be earned by the willing but less efficient workman, would most nearly satisfy the situation in the light of the present economic state.

Supply of Raw Material.

Apart from the effect of the war on the supply of raw material, of which the home supply has always been insufficient, and the shortage of manufactured steel arising from the greatly increased demands in industries manufacturing munitions of war, the interruption of international trading has not to any appreciable extent adversely affected the shipbuilding and engineering trades. In other words, these trades are almost wholly self-supporting British industries.

Before the war the great bulk of hematite ore smelted in this country for the manufacture of acid steel was dependent upon overseas supplies, and as the home production of this quality of ore only totals about two million tons, equivalent to about one million tons of hematite pig-iron, some difficulty has been experienced in keeping up the output of acid steel, which in 1913 had reached a total of five million tons. Fortunately, however, as we may judge from the experience of America and Germany, hematite pig-iron is only required for steel in the highest class of service—that is, for tool-making, guns, parts of engines, motors, and machines, and for these purposes, even if no hematite could be imported, there remains one million tons of Cumberland and Furness pig-iron available which, with careful handling, might in emergency suffice. There is a good home supply of low-grade phosphoric ore suitable for the manufacture of basic open-hearth steel, which, with the addition of imported material, has proved sufficient to keep the steel works in this country employed to their utmost capacity. Many large extension schemes of steel works are in hand, and it is anticipated in the near future that their output will be increased by from 50 to 60 per cent. over the pre-war capacity.

The usual supplies of imported timber, as was to be expected, have been reduced, but home-grown woods are taking their place, and ash, birch, and harder pine-woods are now being used effectively for cabin fittings and framing, where formerly finer imported woods were used.

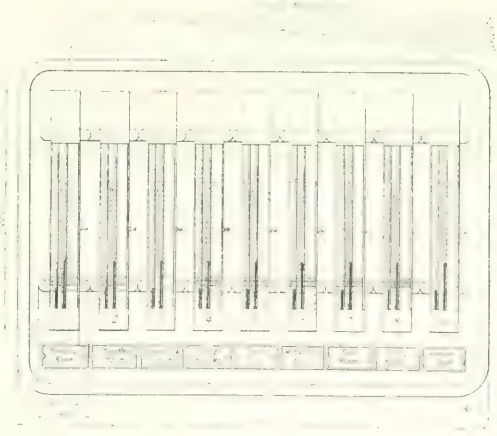
Design of Concrete Keel-Blocks.

There are many designs for concrete keel-blocks, but what is desired is to have the strength of the concrete and the lightness of the wood combined, and it is only by introducing reinforcement scientifically disposed in the block that these considerations can be approached. Apart from the exigency of the situation these blocks have merits of their own, in so far that they improve in strength with age, will not readily deteriorate, and are, therefore, more durable than wood blocks, especially where placed at the after ends of berths subjected to the rise and fall of the tides. Concrete blocks are also fireproof. On the other hand, their weight is greater than that of wood by about 30 per cent., and they are not quite so easily handled. The aggregate of which the concrete is composed is such that a spike may, if required, be driven into a block, and where the make-up of the berth, or the nature of the ground, demands a larger bearing-surface than that of the block, a separate specially reinforced base slab tapered to suit the declivity of the ground can be fitted. The arched type, designed by the Ayrshire Dockyard Company, Ltd., has iron-wire reinforcement laced round tubes which form lifting holes in the block, embedded in concrete having a 40 per cent. aggregate of ½-inch granite chips in the case of the heavier block, and a 22 per cent. coke aggregate in the lighter one. External ledges are worked on the sides, which may be used to support the end of a stage plank or take a flat iron should it be desired to couple a number of blocks together. The arched formation of the block is on sound lines, giving strength with lightness, and the broad base effectively distributes the load on the building berth.

MEASUREMENT OF TEMPERATURE OF REFRIGERATING CHAMBERS.

One of the most important problems to be faced in the economical running of the refrigeration installation on board ship is the correct recording of the temperatures of the various insulated chambers. When large installations are fitted, as on vessels fitted for carriage of frozen cargoes, a staff of refrigerating engineers is employed, and it falls to the duty of one of these engineers to go round twice or three times a day to the various holds and take a record of the temperatures. With smaller installations, however, such as that which is fitted merely for the carriage of the ship's provisions, the engineer on watch has to look after the running of the refrigerating machine, and he is not free to visit the various cold storage temperatures to take a record of the temperature. To overcome this difficulty, various long-distance thermometers have been devised, and in a paper on "Refrigerator Installations for Carriage of Ships' Provisions," recently read before the Liverpool Engineering Society, a report of which appeared in *Shipbuilding and Shipping Record*, January 17, Mr. James B. Wilkie made a reference to one of these long-distance thermometers which, he said, had given very satisfactory results, it being possible to place a board alongside the refrigerator machine, with a thermometer connected to each refrigerator chamber by means of a flexible pipe, and the engineer who is in charge of the refrigerating machine can see exactly what are the temperatures in the refrigerating chambers without leaving the starting platform. The actual length of the connecting tubes in one particular ship between the thermometers in the engine room and the refrigerating chambers varied between 60 and 110 ft., but the flexible tubing is armoured and may be clipped to the bulkheads in the same way as an ordinary electric wire.

Long-Distance Thermometer for Refrigerating Chamber.



Indicator Board showing Temperatures of Refrigerating Chambers.

The particular thermometers referred to are the Sentinel long-distance thermometers. These are made for various kinds of work and present many features of interest. In the class of instrument specially constructed for the cold storage trade, the thermometer consists of a "bulb" which can be of any size or shape, but which is usually in a metal tube $\frac{3}{4}$ in. diameter and $5\frac{1}{2}$ in. long, connected by a flexible metal tube to the indicator of the instrument, which consists of two glass tubes mounted side by side in a metallic casing 22 in. long and 3 in. wide. The flexible tube contains two thin solid drawn steel tubes, and can be made of any length; moreover, being of very robust construction, it will stand a lot of ill usage.

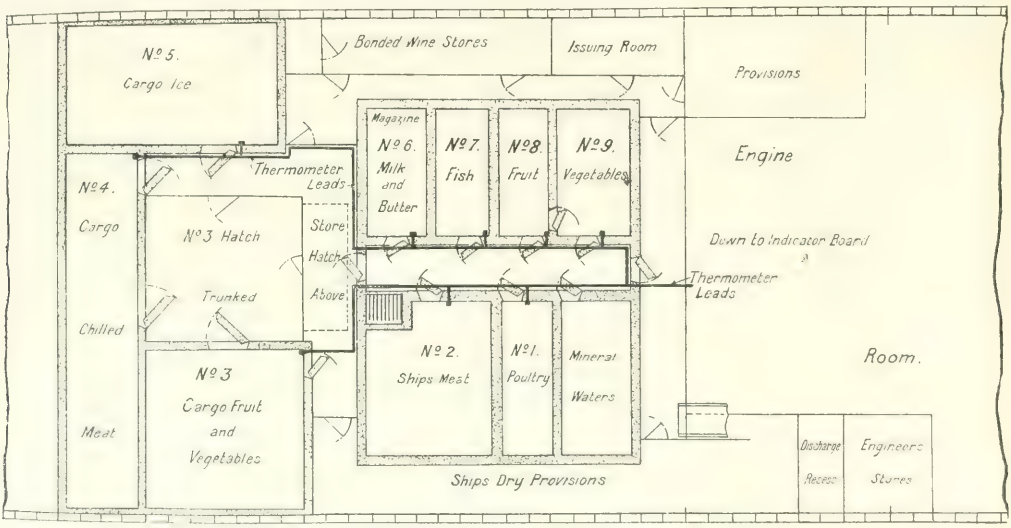
At the back of the glass tubes is the scale, which can be graduated for any range between −10 deg. and 212 deg. F. The right-hand side glass tube is connected by a platinum tube and a solid drawn steel tube to the bulb, while the left-hand side glass tube is connected by a platinum tube to the compensating solid drawn steel tube which runs parallel to the bulb tube, but which is sealed off near the bulb. Part of each glass tube, the whole of each connecting tube and the bulb, is filled with liquids, and the top part of each glass tube is filled with gas at a pressure, thus enabling the bulb to work at any altitude.

The working principle is merely the plain expansion of a liquid due to heat. The heat on the bulb affects the liquid in the tube which is connected to the right-hand side glass tube, causing it to expand, and thus raising the level of the liquid in the right-hand side glass tube. The left hand side glass tube has no connection with the bulb, being sealed off near the bulb, hence the heat on the flexible connecting tube affects both of the fine inner tubes and makes both levels rise in the glass tubes. Thus it is not the position of any level that is a measure of the temperature of the bulb, but the difference of levels, and it is found that with this compensating arrangement an accurate record of the temperature of the bulb is obtained no matter what the variations of temperature on the connecting tube.

To read the instrument, the scale which is mounted behind the glass tubes is moved by means of a knob on the side of the indicator, so that the level of the liquid in the left-hand side tube is set to the bottom zero line. The correct temperature is then read off direct on the scale at the level of the liquid in the right-hand side tube. The degree of accuracy obtained by these thermometers is guaranteed by the makers not to exceed $\frac{1}{4}$ deg. F., and in the paper referred to above Mr. Wilkie referred to a steamer which had been fitted with these long-distance thermometers for over twelve months and which had been carefully checked by means of tested thermometers. The greatest variation noted had been half a degree between the temperature taken with the tested thermometer and that recorded in the engine room, this result being quite accurate enough for the purposes for which they are employed.

The diagram given below shows the arrangement of the flexible cables for an installation of long-distance thermometers in the various provision chambers of a passenger steamer, and the diagram on page 317 gives the arrangement of the indicators in the engine room. A photograph of one of these indicators is also reproduced on page 317.

The class of thermometer described above is suited for the measurement of low temperatures, the range being between −10 deg. and + 212 deg. F. Another class of thermometer for the measurement of high temperatures such as those obtaining in boiler flues is also made by the same company, and in view of its interest to marine engineers is worthy of description. The two classes of thermometers are identical as far as the bulb and the connecting tube are concerned, but the scale range of the high temperature instrument is anything between 200 deg. and 1,000 deg. F., and the indicator itself is different. The working principle is the same, however, namely, the expansion of a liquid due to heat. In the low temperature thermometer the scale is moved to the zero line before being read, but in the high temperature instrument nothing has to be moved, the reading being taken directly from the fixed scale. This is made possible by bending the glass tubes in the form of a treble U tube with two of the U's inverted. Between the levels of the indicating leg—which is connected to the bulb—and the compensating leg, a separate thread of liquid is put, which has a gas at a pressure between them. This central or separate thread of liquid only moves when one level rises; but if both the levels rise together, as they do when the connecting tubes are heated, the central liquid does not move. The temperature is read off this central thread of liquid, which moves up a glass tube in front of the scale in the indicator, and hence no errors occur due to thermal changes on the connecting tube.



Arrangement of Ship's Refrigerating Chambers.

These thermometers are made by the Sentinel Co., Ltd., 49, Shields Road West, Newcastle-on-Tyne.

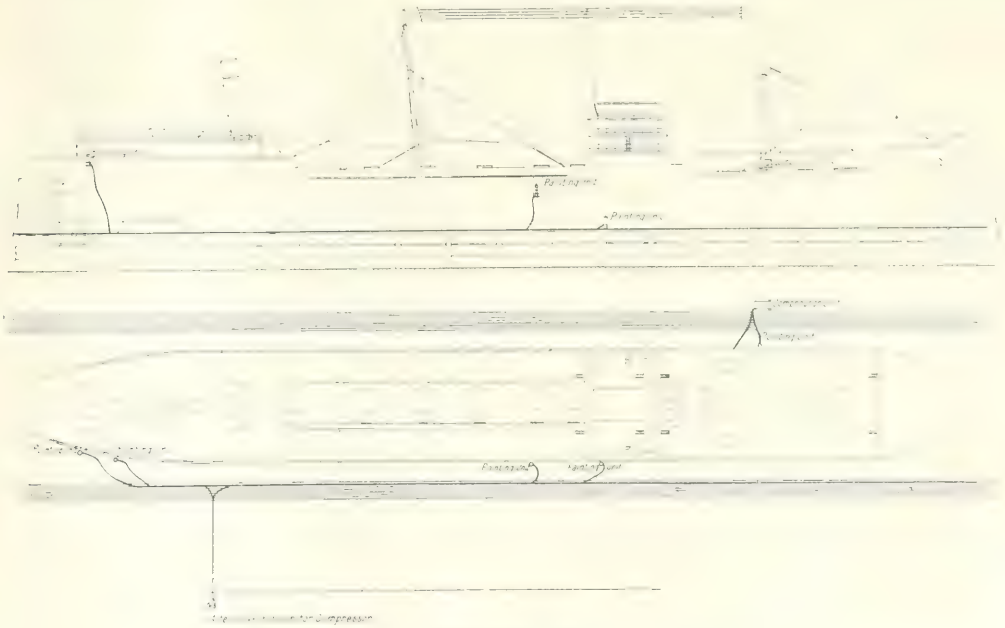
SHIPYARD APPLIANCES.

THE AIROSTYLE SYSTEM OF SHIP PAINTING.

The old-fashioned method of covering large areas with paint by means of a brush operated tediously by hand has for a long while been threatened by various forms of paint sprayers, which claim not only to perform the work far more quickly, but far more efficiently as well. Not only can the paint-sprayer in the hands of a careful workman be operated so as to cover large areas with perfect uniformity, but the spray is of such a nature that it enables the paint to enter into crevices and irregularities of the surface which to a hand-operated brush would be almost inaccessible. This system of paint-spraying has been developed with a large measure of success by Airostyle and Lithos, Ltd., and the Airostyle system of painting as applied to shipwork introduces some very interesting features.

painting was found to be very great, as large a surface as seven square yards having been covered in one minute by one operator, the paint consumption being approximately the same as when brushing. With such a material as red lead the speed was less, owing to the density of the material, but the important point to note is that one and a half to two square yards could be covered per minute, giving a finish equal to two brushed coats, and showing a consumption of paint about equivalent to that when brushing. With such material as bitumastic solution or anti-fouling solution, a speed of eight to ten square yards per minute is possible.

These figures are sufficiently eloquent to prove that this system of painting offers a solution of the labour problem as applied to ship painting, and if a number of the Airostyle units are employed, the speed with which the hull can be red-leaded and then coated with some anti-fouling composition is very great indeed, whilst the number of men employed is correspondingly small. The diagrams on page 320 show the disposition of a number of Airostyle units round a ship in dry dock, together with the location of the



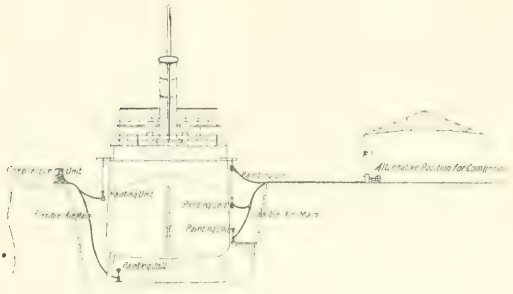
Elevation and Plan.

Vessel in Dry Dock, showing the Position of Painting Units.

At the present time the economical painting of ships' hulls is of national importance. The need for tonnage is so great that only the irreducible minimum amount of time can be spared for ships to lay up in a dry dock, and owing to shortage of labour it is a matter of extreme difficulty to obtain a large gang of men for the purpose of painting the hull, hence it follows that the painting is either neglected, or else but imperfectly done, with the result that the rusting of the plate causes depreciation in the value of the vessel, not to mention the loss of speed due to the more rapid fouling of the ship's bottom. The importance of this question to shipowners and shipbuilders is therefore apparent, and it is interesting to note in passing that the Admiralty have realised the value of the Airostyle system of painting to such an extent that they have had a series of tests carried out in the Government dockyards, which proved to be satisfactory in every way. The speed of air compressor unit, which may either be of a portable nature driven by electric motor or small petrol engine and wheeled to any convenient locality, or of a permanent nature erected in a shop close by the dry dock. The units themselves, which only weigh about one hundredweight, are either carried on movable cradles around the ship, or are slung in such a position as to be reasonably near to the point at which the operator works.

A description of one of these units will be of interest. As will be seen from the photograph and the outline drawing reproduced on page 320, each unit consists of a compressed air tank, and a pressure fed colour pot. Compressed air from a shop supply, such as is generally found in most shipyards for operating pneumatic tools, can be employed, or it can be produced in a specially constructed electric, paraffin or petrol-driven compressed air set. This is led through the steel barrel which forms the framework of the unit

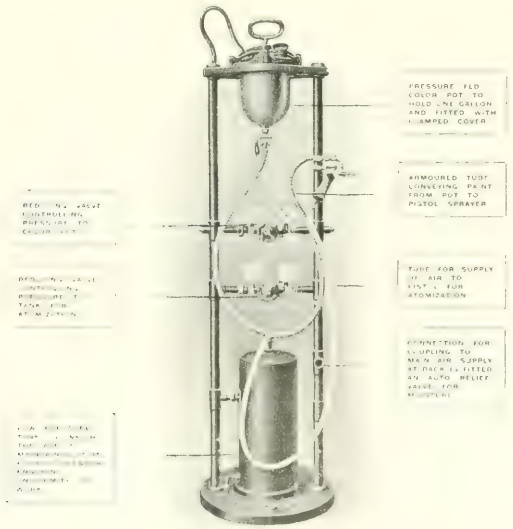
to the low pressure tank through a reducing valve, in which the air is maintained at an equable pressure, ensuring uniformity of work. This low pressure supply of air is utilised for atomisation of the paint in the "pistol" from which it is discharged in the form of a very fine spray on to the surface being coated. An automatic relief valve for draining away moisture fron this air cylinder is



End Elevation.

Vessel in Dry Dock, showing Disposition of Painting Units.

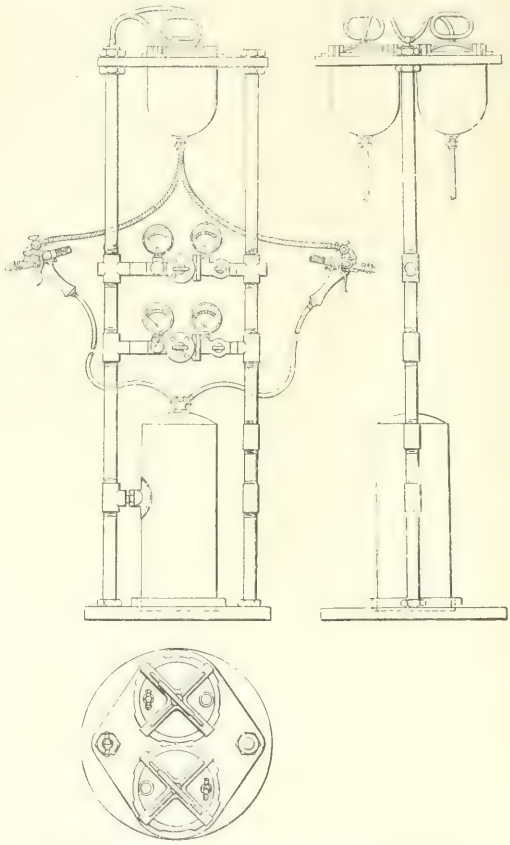
fitted as shown. Air direct from the compressor is also led through a reducing valve to the colour pot above. The paint pot is fitted with a clamped cover and the pressure of air forces the paint through an armoured tube to the pistol sprayer. There are thus two pipes connected with the pistol, one conveying the paint under pressure


PRESSURE FED COLOR POT TO HOLD ONE GALLON AND FITTED WITH CLAMPED COVER
ARMOURED TUBE CONVEYING PAINT FROM POT TO PISTOL SPRAYER
TUBE FOR SUPPLY OF AIR TO FIST FOR ATOMIZATION
CONNECTION FOR COUPLING TO MAIN AIR SUPPLY AT DECK IS FITTED W/ AUTO RELIEF VALVE FOR MOISTURE

Airostyle Standard Portable Paint-Spraying Unit.

and the other the compressed air, and construction of the pistol is such that the air atomises the paint and projects it as finely and uniformly divided spray from the nozzle of the pistol on to the surface to be coated. Pressure gauges are fitted on either side of the two reducing valves which can be operated at will, and thus the unit can be employed for paints of different consistencies and for producing sprays of different intensities. The photograph shows one of the standard Airostyle portable units having one colour pot and one spraying pistol, but the drawing represents a unit having two colour pots and two pistols, which can be utilised either for two colours or for two operators.

One of the objections frequently urged against spray painters is that it cannot be employed for interior work on account of the spray, which is so fine, gradually permeating the whole atmosphere of the compartment. In the case of new ships, for painting the bulkheads and partitions of cabins, &c., where, owing to the confined space the "fumes" created when spraying are likely to give some



Outline of Portable Paint-Spraying Unit with Two Sprayers.

trouble, motor-driven exhaust fans mounted on small trollies are used. Between the fan intake and the fan itself, a filter is introduced, so as to collect all the paint particles, and thus the exhaust, is cleaned of all injurious elements.

The Airostyle portable painting units, together with all accessories, such as air compressors, exhaust fans, armoured flexible pipes, &c., are made and supplied by Airostyle & Lithos, Ltd., 35, St. Bride Street, Ludgate Circus, London, E.C.4, and it is interesting to add that the firm have, as a result of the tests noted above, obtained important contracts from the Admiralty for the supply of painting plant.

GENERAL NEWS SECTION.

PERSONAL.

The death has occurred at Southampton of Mr. T. W. Fradgate, Belgian Consul at Southampton, and a well-known shipping agent.

Our Parliamentary correspondent, writing on Tuesday night, states that it is looked upon as decided that Lord Pirrie will be appointed to a post in which he will supervise the operations of shipbuilding as a whole.

The loss at sea is keenly regretted at Hull of Captain F. Boyle, who had for many years sailed under the Wilson flag in the Antwerp trade. Deceased was a very popular Humber shipmaster.

The death is announced from Belfast of Sir Alexander McDowell, long a prominent figure in the shipping and shipbuilding world of that city. Deceased was legal adviser to various shipping interests, and acted in a similar capacity for the firm of Harland & Wolff and Workman, Clark & Co., Ltd. He was chairman of the Belfast Ropework Co., Ltd., and, on the death of Mr. Edward Bates, a few years ago, was appointed solicitor to the Belfast Harbour Commissioners, his last work for which was the preparation of the Omnibus Bill now before Parliament. He was a member of the Commercial and Industrial section of the Reconstruction Committee and was Director of Munitions for the Northern area of Ireland. In 1917 he was created a Knight Grand Cross of the Order of the British Empire. He was an active figure in political circles and was one of the Unionist representatives to the Irish Convention, during the earlier sittings of which he was taken ill and several operations afterwards became necessary. The funeral was private, the chief mourner being Mr. Jas. McDowell, manager of the Belfast Steamship Co., Ltd.

The late Sir Alexander McDowell.

The death has occurred in Belfast of Captain Andrew Davidson, for many years one of the best known skippers of the Irish cross-Channel service. He had been 46 years in the service of the Belfast Steamship Company, and during that time commanded a number of their passenger ships on the Belfast-Liverpool route. He retired a few years ago.

Sir Frederick Sprott has vacated the chairmanship of the Bombay Port Trust preparatory to retirement. He has held the appointment since 1909, and during that period several big undertakings have been completed, providing better and increased facilities for the port. The revenues of the Trust increased in that time from about 79 lakhs to approximately 178 lakhs in the current year. Sir Frederick went out to India and joined the Public Works Department in 1885. His public services were recognised by the King on the occasion of the opening of the Alexandra Dock, in March, 1914, when a knighthood was conferred upon him.

The Most Excellent Order of the British Empire (Colonial List).

The King has given orders for appointments to the Most Excellent Order of the British Empire for services rendered in or for the Overseas Dominions, Colonies, and Protectorates in connection with the war. Included in the list are the following :—

Knights Commanders.—Rear-Admiral William Clarkson, R.A.N., C.M.G., for services in connection with the control and re-organisation of Australian coastal shipping; and Mr. Edward Owen Cox, Chairman, Australian Overseas Shipping Committee.

Commanders.—Lieutenant-Colonel William James Norman Oldershaw, for services in connection with the Commonwealth Shipping Board; Mr. William James Young, for services in connection with shipping; and Mr. Andrew Agnew, Chairman of River Craft Committee, Member of Food Control and Shipping Committee and Commandant of the Civil Guard, Straits Settlements.

Members.—Mr. Robert Randal Bruce, Receiver-General, Harbour Master and Shipping Master, St. Helena; Mr. Matthew McKean Fitzpatrick, Senior Engineer, Marine Department, Nigeria, for services in connection with the salvage of vessels at Duala; and Mr. Robert Oliphant Hutchison, Superintendent of Imports and Exports, Hong Kong.

The submission to the King of a list for the Dominion of Canada has been postponed on the request of the Canadian Government.

Lord Inchcape, Chairman of the Peninsular & Oriental and British India Steam Navigation Companies, has consented to act as Trustee and as a member of the National Committee on Sea Training in the place of the late Earl Brassey.

Mr. William Thomas, of Cardiff, who for many years was Superintendent Engineer for the Hain Steamship Company, Ltd., and who died on February 8 last, left estate of the value of £46,872, with net personalty of £44,359.

Mr. Robert Wallis, Works Manager, Wallsend Shipway & Engineering Company, Ltd., presented, on behalf of the officials, foremen and office staff, a gold watch to Mr. Joseph W. Bowman, as a mark of their esteem on his leaving the works after 31 years' service.

An announcement was made on Newcastle Commercial Exchange that Mr. A. Munro Sutherland, Mr. George Renwick and Major R. Temperley were about to visit the Western Front, and it was agreed that they should take with them an encouraging message to the men of the local battalions.

Mr. Charles Wright has been elected Chairman and Colonel S. Wishart, Deputy Chairman, of Lloyd's Insurance Brokers' Association in the places of Mr. W. H. P. Leslie (late chairman) and Mr. H. J. F. Dumas (late vice-chairman), who have retired in accordance with the Articles of Association.

Sir Eustace Tennyson D'Eyncourt, Director of Naval Construction to the Admiralty, and formerly of Elswick Works, Newcastle, and Sir George Goodwin, Engineer-in-Chief to the Navy, have been elected honorary members of the North-East Coast Institution of Engineers and Shipbuilders.

Sir George J. W. Noble, Bart., Jesmond Dene House, Newcastle, who has just taken office as High Sheriff of Northumberland, is the eldest son of the late Sir Andrew Noble, who for over half a century was connected with Sir W. G. Armstrong, Whitworth, Ltd., and was for many years the chairman of the company.

Sir Alan Garrett Anderson has been nominated to succeed Mr. Alexander Falconer Wallace, as director of the Bank of England, at the forthcoming election which is to take place on March 27. Sir Alan is a member of the firm of Anderson, Anderson & Co., joint managers of the Orient Steam Navigation Company, Ltd.

The *Journal Officiel* (Paris) recently published a list of recipients of the Medal of Reconnaissance Français which was recently instituted in recognition of war work done for France by citizens of various countries. There are three classes—silver gilt, silver and bronze. In the second class are 58 persons, eight of whom are British. These include Mr. Max Wideman, shipowner, Cardiff.

Captain Sidney Armstrong, a Humber shipmaster, has just returned home to Hull from Germany, after being there for three and a half years. Captain Armstrong was a familiar figure before the war at the Baltic ports, to which he sailed under the Wilson flag for many years. At the preceding events to the present war he was with his vessel, the Wilson liner *Castro*, at Hamburg, and three days before the declaration of war he and his crew and ship were captured.

Lieutenant-Colonel John Arthur Jones, J.P., is the high-sheriff for the ensuing year for the county of Glamorgan. He is one of the most prominent figures at Cardiff Docks. A member of the Executive Council of the Chamber of Commerce, of which body he was President in 1906-7. He is a past Chairman of the Monmouthshire & South Wales Coal Freighters' Association, a director of Watts, Watts & Co., Ltd., and also of the United National Collieries, Ltd., and Burnyeat, Brown & Co., Ltd.

Mr. Johan Vogt, of Vogt & Maguire, shipbrokers, and Norwegian Consul at Liverpool, has received from the King of Denmark the honour of knighthood of the Ancient Order of Dannebrog. Mr. Vogt, who, by the way, is cousin to the Norwegian Minister to the Court of St. James's, London (Mr. Benjamin Vogt), has probably been awarded this distinction for the special interest he has taken in the well-being of Scandinavian sailors, especially at Liverpool, during the present war. Mr. Vogt was one of the prime movers in the recent formation of the Liverpool Committee of the Norwegian Chamber of Commerce in London.

The death has occurred at Naples of Mr. William Peirce, who had spent most of his life in developing the shipping industry in Italy. He was about 60 years of age, and as owner and manager of the Pierce Line, and managing director of the Sicula Americana, was the largest and most successful shipowner, first at Messina, where the firm was established, and afterwards at Naples. Mr. Peirce recently formed the Transoceanic Società Italiana di Navigazione, together with the Società di Navigazione a Vapore "Italia" and Navigazione Generale Italiana, with a capital of 100,000,000 lire, half of which was subscribed by Mr. Peirce, who was the President and head of the Committee of Management.

The following have been elected members of the Cardiff Institute of Shipbrokers (Incorporated): Mr. R. L. Crocker (E. T. Agins, Ltd.); W. B. Stoddard (Bowring & Co.); T. S. Braithwaite (Braithwaite, Heslop & Co.); A. W. Bruton (Albert W. Bruton); Frank Samson (Chessell & Co., Bristol); J. S. Johnson (Chas. Cravos & Co.); L. E. L. Downing (E. C. Downing); Henry W. P. Waller (J. T. Duncan & Co.); E. Earl (Edward Earl & Co.); Chas. J. Evans (Evans & Reid, Ltd.); Fred B. Fawcett (F. B. Fawcett & Co.); T. H. Griffiths, L. P. Moliner, S. E. Pittard (T. H. Griffiths & Co., Ltd.); Wm Leon (Hall Bros., Cairns, Noble & Co., Ltd.); T. S. Harrison, O. W. Harrison (Harrison, Sons & Co., Ltd.); C. Hartly Hodder, E. V. Shapley (Hartly Hodder & Son, Ltd., Bristol); F. W. Holman, Jean Roeckens (Holman Coal & Shipping Co., Ltd.); W. H. James (Henry R. James & Sons, Bristol); H. Morgan (E. Jenkins & Co.); Lewis Lougher (Lewis Lougher & Co.); H. O. King (Lysberg, Ltd.); E. W. Jones (Mordey, Jones & Co.); A. W. Boucher (Wm. Milburn & Co.); S. J. Jacobsen (W. E. Pinkney & Co.); J. Ruddy (Sir R. Ropner & Co., Ltd.); Percy Samuel (P. Samuel & Co., Ltd.); Willie Smith and Douglas Smith (W. R. Smith & Sons); J. H. Thomas (Evan Thomas, Radcliffe & Co.); E. Franklin Thomas and Chas. E. Long (Franklin, Thomas & Co., Ltd.); Walter Thomas and C. S. Wilson (Thomas & Stephens); John Fowler (Turner, Edwards & Co., Bristol); C. H. Turnbull (Turnbull Bros.); J. A. Jones and Edgar Watts (Watts, Watts & Co., Ltd.); G. Leighton (Wilson, Sons & Co., Ltd.); G. W. Moore, S. J. Arthur and C. Colley (Worms & Co.); H. Storey Whitfield and Chas. Kendrick (Whitfield, Kendrick & Co.); C. A. Hicks (Vergottis & Co.); H. Yeoman (F. Yeoman & Sons).

FROM OUR CORRESPONDENTS.

CLYDE DISTRICT.

(From Our Own Correspondent.)

Trade at Ayr.—A slight decrease in the shipping trade at Ayr harbour has been noticeable since the beginning of the year. For the quarter just closed the ordinary receipts amounted to £9,625, a decrease of £2,583, and the expenditure to £6,951, a decrease of £319. Coal shipments for the same period have been lower by about 25,800 tons, while general merchandise shows a falling off to the extent of about 1,200 tons. On the other hand, there has been an increase of 240 tons in the shipments of pig-iron.

Clyde Maritime Board.—The Shipping Controller has approved of the appointment of Sheriff Craigie, K.C., Glasgow, to be neutral chairman of the Clyde District Maritime Board. This appointment has given considerable satisfaction locally, and Sheriff Craigie's election was unanimously approved at a recent meeting by shipowners and seamen at the port. It will be recalled that the Board was instituted by the Shipping Controller with the view of securing closer co-operation between employers and employed, and in order to prevent differences arising between shipowners and seamen. The Board will also adjust any differences that may arise, and it will take steps to maintain standard rates of wages, and also supervise the supply of seamen.

Shipbuilder's Bequest to Dumbarton.—Intimation has been made of a bequest from the Denny family to the town of Dumbarton. Sir Archibald Denny, Colonel John M. Denny, Mr. Leslie Denny, brothers, and Mr. James Denny, cousin, who are trustees and residuary legatees of the late Mr. Peter Denny, engineer and shipbuilder, being desirous of carrying out the known intention of Mr. Peter Denny to apply a portion of his estate for the benefit of the inhabitants of the burgh of Dumbarton, have decided to pay 25 per cent. of each of their shares, when the sums become available, for the promotion of the moral, intellectual or social improvement of the inhabitants, or the provision of the means of recreation. Intimation to this effect has been formally received by the Town Council, and the gift has been gratefully accepted by the Council.

Dredging the Clyde.—The Clyde Lighthouses Trustees, who have under their charge the navigable channel of the river on its lower reaches, have been given permission by the Board of Trade to deposit all additional quantities of dredged materials off Porthill Point. The Trustees are, therefore, in a position to continue the deepening of the channel under their care. This matter was referred to by Mr. Francis Henderson, who presided at a meeting of the Trustees last week. The average depth of the channel, Mr. Henderson said, was now 26 ft. at low water, spring tides. That was to say, there was an average of about 36 ft. at high water. The limit of depth which they set themselves to attain had now been almost reached, and the dredging of the channel had been practically completed up to the limit of the authority granted by the Board of Trade.

Shipyard Wages Claims.—The Committee on Production held sittings in Glasgow last week at which a number of claims by shipyard workers were heard. The Boilermakers' Society made a claim against William Beardmore & Co. for the payment of 10 per cent. on piece-rates as from March 1, 1915, to their members engaged in the boiler shop at Dalmuir; and for ¾d. per hour as given by the Committee from August 4, 1916, to certain of their members who, it is contended, are not paid by results. A claim was also made by the Boilermakers' Society that squads of riveters employed by Barclay, Curle & Co., while working on repair work, should be paid at the rate of 6s. plus 10 per cent., plus 2½ per cent. for holderson, plus war bonuses in the case of all work for which prices cannot be fixed. The Ship Constructors' and Shipwrights' Association applied for the payment of a bonus of 12½ per cent. to certain workmen employed by the Clyde Navigation Trust and Greenock Harbour Trust, on shipbuilding and ship repairing work. The decision in each case was reserved.

SCOTTISH EAST COAST DISTRICT.

(From Our Own Correspondent.)

Peterhead Harbour Trade.—The accounts of Peterhead Harbour Trustees, which have just been closed for the twelve months ended to February, 1918, show an increase in revenue for the year. The revenue amounted to £6,121, compared with £5,582 for the preceding year, an increase of £539.

Aberdeen Pilot Service.—At a meeting of Aberdeen Harbour Board, held last week, notice of motion was given to the effect that a remit be made to a special committee to report on the present pilotage service of the port with a view to providing a more modern and up-to-date service. At the same meeting it was decided to increase the subsidy to pilots from £1 15s. to £2 5s. per week for each pilot, the arrangement to take effect from the first week in February.

Arbroath Harbour Finances.—The financial position of Arbroath Harbour was considered at a special meeting of the Harbour Trust last week. Since the war broke out the trade of the port has fallen off to such an extent that the Trustees have had difficulty in carrying on the undertaking for lack of sufficient revenue. Recently the Trustees asked Mr. J. C. Robertson, C.A., Dundee, to prepare a statement of the financial position of the harbour as at November 11 last, and this statement was considered at the meeting last week. It showed that the total ordinary liabilities amounted to £3,237 17s. 6d., and the total sum due to creditors, including guaranteed stockholders, was £18,237 17s. 6d. With regard to assets, Mr. Robertson did not set down any value of the harbour and its pertinents. A comparative statement of the revenue for two three-year periods from 1912 showed that the revenue in 1912 had been £1,794, and in 1917, £386. In 1915 there had been a shortage of revenue of £499; in 1916 a shortage of £1,017; and in 1917 a shortage of £1,062. Mr. Robertson, speaking to his statement at the meeting, said it was not for him to value the harbour. The value of the harbour of Arbroath was its relation to the trade of the town of Arbroath, and they, the Trustees, were the men who knew what the town needed, what the harbour had done for it in the past, and what, after the hurly-burly of the war was over, the harbour was capable of doing for Arbroath in the future. In the last balance sheet the harbour was put down at £40,000. If the harbour was actually worth half of that then the Trustees were entitled to say that they were able with time and consideration to meet their debts, because he made them out to be £18,237. The Trustees unanimously agreed to call a meeting of the creditors of the harbour at as early a date as possible.

NORTH-EAST COAST DISTRICT.

(FROM OUR OWN CORRESPONDENT.)

River Tyne Police.—The River Tyne police have done valued special work since the outbreak of the war, and it was therefore pleasing to learn at the last meeting of the Tyne Improvement Commission that four of the officers have been mentioned by the authorities "as deserving of special commendation." These are Chief Inspector William Williams, and Inspectors W. H. Mackie, G. W. Mayne, and J. Leach. "The good work" done by the members of the river force was brought by a War Office representative to the notice of the Home Secretary, who expressed satisfaction at the intimation and requested that a note be made in the records of the officers named.

Ship Production.—In an interview on the shipbuilding situation, Sir George B. Hunter, chairman of Swan, Hunter & Wigham Richardson, Ltd., the Tyne firm whose output usually heads the list, as it owns two very large yards, is reported to have said that the Tyne is beating the Clyde at the present time in the matter of production. This is gratifying to local pride, but it does not tell us whether the Tyne is doing all it is capable of. Sir George thinks the river is not reaching its maximum output, and believes there is room for improvement everywhere. He does not suppose that the creation of a Ministry of Shipbuilding would perform wonders, and holds to the view that hard work will produce the ships. To get the best results it is now generally recognised that steady work is the thing, helped on by a minimum of interference by the Government departments.

Boilermakers' Society's Officials.—There are 80,000 members of the Boilermakers' Society, but only the few evidently take the trouble to vote at their branch meetings, even when the questions at issue are of more than ordinary importance. Votes have just been taken on a proposal to increase the salaries of the full-time officials by 50 per cent. on pre-war rates, and the result was as follows: For the advance, 4,494; against, 475. Branch officials' salaries are to be increased by 25 per cent., the voting in favour being 4,730 and against 443. At the May meetings the branches will vote upon a proposal to increase the number of district delegates by seven. If this is carried, the total number of district delegates will be 22. The reason for the proposed increase in delegates is that "since the present allocation of districts the membership has doubled itself, and by the opening of new branches the area of districts and travelling has vastly increased."

Mid-Scotland Ship Canal.—This subject was discussed at the last meeting of the River Wear Commission. The chairman (Mr. R. M. Hudson) stated that two routes were proposed. The Loch Lomond route would be from Grangemouth by the valley of the river Forth to Loch Lomond and join the sea at Arrochar-Loch Long. This would have a total length of 71¼ miles. The other and direct route was from Grangemouth through the valley of the rivers Bonny and Kelvin into the River Clyde below Glasgow. This would have a total length of 50 miles. The estimated cost was £38,000,000 for the Loch Lomond route and £52,000,000 for the direct route. On the recommendation of the Consultation Committee the following resolution was agreed to: "Whilst approving generally of the Mid-Scotland Ship Canal for strategic purposes, the commercial aspect of the matter requires further consideration, and no action should be taken until this is done. This applies to either of the engineering schemes for the construction of the canal now before the public."

Engineers and Man-Power.—So far as Tyneside is concerned one may detect a changed attitude among the engineers to the man-power proposals of the Government. When the comb-out was first decided upon the skilled men made it a strong plank in their platform that dilutees must go first. This led to a series of negotiations between the Amalgamated Society of Engineers and the Government, with the result that certain modifications of the original demands have been made. It is understood that the young and fit dilutees are to be taken in a more general way than was at first proposed, the liability to serve not being confined to men who entered the works since August, 1915, but to those also who entered in August, 1914, and onwards. It has been estimated that there were about 119,000 dilutees, and that of these about 70,000 have been already withdrawn for service in the field. A large number of young members of the A.S.E. have lately joined the Royal Navy and the Naval Air Service, and more would have joined up, it is said, had their employers been able to spare them from important national work. Thus there are indications that the whole business is being quietly and steadily adjusted to the needs of the country.

THE MERSEY DISTRICT.

(FROM OUR OWN CORRESPONDENT.)

New Steam Pilot Boat.—The Pilotage Committee of the Docks Board have received a letter from the Deputy Controller for Auxiliary Shipbuilding, intimating that facilities cannot be granted for the construction of the proposed new steam pilot boat. A tender from Murdock & Murray, Ltd., of Glasgow, for the construction of this new pilot boat was accepted by the Board on February 14 last, and as the boat is urgently required, delivery was hoped for by next spring. This will now be impossible.

Facilitating Dock Traffic.—Those shipping men who latterly have felt some concern about the good reputation of the port will be interested in what the Special Committee on Mechanical Appliances is doing to facilitate the movement of traffic on the dock quays. Experiments are at present being made with an improved sack-filling machine, which it is calculated will result in the saving of a good deal of time in the handling of grain cargoes, and also in gravity runways for the handling of tea parcels on the dock quays. These experiments are being made with a view to encouraging the Master Porters to increase their mechanical appliances on the dock quays, in order to expedite the movement of traffic inward and outward.

Warehouse Rates.—The triennial revision of the Mersey Dock and Harbour Board warehouse rates has just been concluded, and approved, and the new schedule will be brought into operation on April 1 next. The new Book rates are plus 66 per cent. those fixed at the revision in 1915, and represent the percentage increases authorised during the last three years, consequent upon increased wages now paid in the administration of the warehouses. Generally the new rates have been based on the recently revised Master Porters' rates, and while there will be no increase in present in the charges actually made, any further movement for increased pay by dockside workers will inevitably compel the Board to enforce a higher scale by a percentage addition to the new schedule rates.

The consideration of these new rates by the Board has brought

out the fact, which is not generally known by the public, that the revised schedule has to be approved by revisers, namely, the Lord Mayor, the senior magistrate, and the chairman of the Dock Board, and this out-of-date procedure called forth a scathing comment from Colonel Concanon, one of the managers of the White Star Line, who has just been elected to a seat on the Docks Board. He observed that the Board ought to be in a position to increase or decrease the rates as the circumstances of trade made it necessary, and without reference to people who knew nothing about the subject. He further suggested that when next time they went to Parliament with a Bill they should get a clause put in it to abolish the compulsory triennial revision of the rates, and also the fixing of a maximum. The warehouse book, he said, ought to be on the same basis as the dock and town dues and the Master Porters' rates. The view so succinctly expressed by Colonel Concanon seemed to find general endorsement by other members of the Board, and action on the lines he suggested will no doubt be taken in the matter.

SOUTH WALES DISTRICT.

(From Our Own Correspondent.)

Freight Rates for Irish Pitwood.—The Ministry of Shipping has fixed the following maximum freight rates for carrying pitwood from Ireland to South Wales ports: Drogheda, Dublin, Waterford, Cork, Wicklow, Wexford, Dungarvan, New Ross, at 19s.; Fenit at 23s.; Galway and Limerick at 25s. Loading and discharging for charterer's account. Demurrage as per coal scale. Other customary conditions of charter.

Trimming Tariff Changed.—At a meeting of the South Wales Central Trimming Board it was decided in regard to the Llanover, Shandon, Southport and Exmouth type of steamers that the tariff referring to these vessels be deleted and that they should in future come under the general tariff. The payment for such steamers will now be 3d. per ton, subject to war bonus, instead of the previous rates of 2d. and 2½d. per ton. The Chairman of the Board (Mr. Thomas Evans), Messrs. Dan Radcliffe, H. J. Hill, J. T. Clatworthy, and Samuel Fisher were appointed a committee to consider the question of despatch of tonnage, and to make a report to the Board on the subject.

Swansea Harbour Trust.—At the annual meeting of the Trust, Mr. Roger Beck, the newly-appointed chairman, referred to the efforts which are being made to obtain recognition from the Government in the matter of making Swansea a controlled port. The port, he said, was one of the most important in the Bristol Channel by reason of its proximity to the open sea, and he looked forward with the greatest confidence to the time when the port would be restored to a position which it never ought to have lost. He assured the bondholders that there were brighter times in store, and that there would be no sacrificing of their incomes. The finances of the Trust for January showed a deficit of £8,145, but the returns for February showed an increase of 40,000 tons over the corresponding period last year.

Trade of Swansea Harbour in 1917.—The report of the general manager of the Swansea Harbour Trust, on the trade of the port for last year, states that during this period national interests have necessitated further restrictions upon imports and exports, which, as a result, indicate a fall to the extent of 923,363 tons compared with the preceding year. Comparing last year with 1913, the aggregate loss amounts to 3,000,000 tons. The net registered tonnage of shipping dealt with in the year was 1,801,623 tons, compared with 2,435,052 tons in the preceding year. The report proceeds:—"In conjunction with the railway-owned docks in the Bristol Channel which are under Government control, application has been made to the Board of Trade for the necessary sanction to increase rates on shipping and rates on goods under Regulation 39 BB of the Defence of the Realm Act. The necessity for the raising of rates and charges is to be deplored, but it is incumbent that higher charging powers should be obtained in order to meet the heavy burdens arising out of the continued increase in wages, stores, &c. The application to the Board of Trade to make Swansea a controlled port has not yet borne fruit. In regard to the agreement with the Anglo-Persian Oil Company, owing to war conditions the licence for the carrying out of the work, and all priority for labour and material, has, for the time being, been withdrawn. The gross traffic which passed over the railways of the Trust in 1917 amounted to 4,782,502 tons, as against 5,106,502 tons in 1916.

BELFAST DISTRICT.

(From Our Own Correspondent.)

Shipbuilding Reorganisation.—There is nothing special to report in connection with the shipbuilding industry. The Easter holiday will occupy three days, and a special effort is being made to get the men back on the Wednesday morning so that there need be as little interruption of work as possible. The carpenters and joiners who were on strike have returned to work pending arbitration in London. It is generally expected in Belfast that Lord Pirrie will receive an appointment in connection with the reorganisation of the shipbuilding industry by the Government with a view of increasing the output.

Ulster Volunteer Hospital.—The effort is being made by the shipbuilders and engineers of Harland & Wolff, and Workman, Clark & Co., to raise a minimum sum of £5,000 in aid of the Ulster Volunteer Hospital Soldiers' and Sailors' Service Club, and other patriotic works in Belfast. A committee representative of the staffs and workmen of each firm has been appointed, and it is hoped by a football match on Flag Day, April 5, and a war saving ballot, to raise the required amount. Mr. Charles Payne, J.P., of Harland & Wolff's, and Mr. G. E. Clark, of Workman, Clark & Co., are presidents of the committee, and the secretarial work is in the hands of Mr. W. Denholm, of Workman, Clark & Co.

Electric Light for Harbour Estate.—The Corporation of Belfast has at last come to a decision on the question of erecting an electric light station on the Harbour Estate, and the Commissioners have offered a suitable alternative site in lieu of that on the ground recently leased to Harland & Wolff. Workman, Clark & Co. had applied to the Corporation for current, and it is stated will require up to 40 per cent. of the output of the new station. The Corporation resolved on Friday to apply for the loan of £310,000 to build a station. Sir John Snell, of London, is to be employed as a consultant at a commission of 2½ per cent.

During the discussion a letter was read from Workman, Clark & Co., in which they stated that as far as they were concerned it was largely a matter of indifference whether they generated current themselves or took it from the Corporation. They had got in tenders for new generators—all ready for acceptance—and it was only at the instance of the Controller of Electrical Supplies that they held their hand. It was, however, essential that they should know at once which it was to be; they had held up the work on the motors for more than a month, and must now get on with them one way or the other, or the output of shipping would be seriously delayed.

Harland & Wolff have a large generating station of their own. They have also written the Corporation asking if they could give a supply of electric current to their works for power and lighting, and, if so, up to what amount and how soon it could be furnished at their terminals; also, what the lowest terms would be, and that their anticipated demand would amount to at least several thousand kilowatts.

THE FREIGHT MARKETS.

(From Our Own Correspondents.)

London.—On the Baltic Exchange the amount of business in chartering has shown no expansion, but rates remain very firm. Homeward from the River Plate 200s. offers to this country, and 205s. to France. The ports of the North American Atlantic seaboard would pay 230s. on net form to this country, 260s. to France, 350s. to the Mediterranean, and 360s. to West Italy, an additional 30s. being obtainable for Gulf loading. Heavy grain would come at 50s. to the United Kingdom, 57s. 6d. to France, and up to 77s. 6d. to the Mediterranean. General cargoes can be had to South America at good rates. For nitrate business 185s. could be done to this country. The Eastern section of the market is again displaying keenness for tonnage and rates are once more up to 250s. on scale basis from Karachi to the United Kingdom, and 275s. on deadweight from Bombay to this country and up to 425s. to the Mediterranean. From the Macras Coast kerried cargoes can be worked at 550s. to Marseilles, and from the rice ports of Burmah and Saigon 500s. to 550s. can be had to the United Kingdom or France. From Australia tonnage is in demand at 110s. to South Africa. Salt cargoes are worth 90s. Torrevieja to Chittagong. In the Mediterranean section of the market the ore and phosphate ports are chartering on the basis of 45s. Huelva to the Mersey, 60s.

Huelva to the East Coast United Kingdom for pyrites: 7d. Sfax to the Bristol Channel; 65s. Tunis to the Clyde; 50s. Bougie to the Clyde; and 50s. Bilbao to Boulogne. Bay rates are without attention, 17s. being the value from Bordeaux and 20s. from Bayonne to the Bristol Channel.

Glasgow.—The continued dearth of tonnage is holding business in abeyance. Rates, however, continue firm. On several days recently no fixtures were made public. Among those reported were: Steamer, Bayonne to Bristol Channel, 20s. prompt; sailing ship, New York to Calcutta, 90,000 cases, 81s. March-April. The homeward market was short of boats, and consequently business was at a standstill.

Newcastle-on-Tyne. The supply of requisitioned tonnage in which to load cargoes of coals on official account has been well maintained during the week under review and still continues good. Indeed, practically all the Northumberland steam coal collieries are now enabled to work full time and have every prospect of being able to do so, for, at all events, some days to come. The employment at Durham gas coal pits has been rather patchy by reason of the fact that certain tonnage intended for use there has had to be diverted elsewhere; nevertheless, the degree of employment at these collieries has been high, comparatively, with that obtaining a short time ago. Apart, however, from the happy condition of things thus brought about, there has been exceedingly little movement in shipping in this district during the week. So far as "free" tonnage is concerned, half-a-dozen fixtures are all that are to be recorded. Of these, by far and away the most interesting are two fixtures for Bilbao which have been done at the amazingly high rates of 300s. and 310s. respectively, as against 180s. quoted only a few days since. Quotations for Portuguese ports have undergone no change, in the absence of actual business, and 115s. is still quoted for Lisbon, with 125s. for Oporto. The coaling stations are steady at 100s. for Gibraltar and 200s. for Port Said. The Spanish Mediterranean is strongly held at 440s. for Barcelona. Scandinavian business done is confined to the engagement of two steamers for Gothenburg at, respectively, 155 kr. and 160 kr. and one vessel for Stockholm at 175 kr. It will be observed that Gothenburg is rather firmer than it was a week ago and that Stockholm has advanced on the week by 12½ kr. There is still no coasting business to report.

Liverpool.—The freight position here can still be summed up in a dull market, continued tonnage shortage, and consequent firm rates. With the supply of ships insufficient for Allied needs, the high rates offering to neutral countries are quite ineffective. A steady business is being done in time charters, and 49s. has been paid for twelve months' general trading, and also for handy neutral boats trading within the United Kingdom, Dunkirk and Gibraltar limits. The inquiry continues good in this section at firm rates. With respect to homeward freights, North America maintains an active demand for net form of charter on basis of 230s., New York to Liverpool; 260s. to 275s. to French Atlantic; 360s. to Marseilles, with 30s. extra for Gulf loading. Grain rates keep firm at 50s. per quarter from the Range to United Kingdom, 56s. 3d. to French Atlantic, and 75s. to Italy. Eastern freights are firm, and tonnage is keenly inquired after. Rates, which can only be indicated, are Saigon, 550s. and Burmah, 500s., to France; Rangoon, 425s., to Cuba; Bombay, 425s. d.w. to Genoa; and Karachi, 230s. on scale basis to United Kingdom. Wheat from River Plate is firm at 200s. for neutrals to United Kingdom.

Cardiff and Swansea. The market has shown a little more activity. Official tonnage was in fairly good supply, but little free tonnage has been on offer. An active inquiry continues in evidence, and previous rates were fully maintained. The French ports have been quiet, if judged by the fixtures reported, but the largest portion of the business transacted is not disclosed. Previous rates continue to be quoted for Spanish destinations. In the Mediterranean direction two fixtures were reported for Gibraltar at 100s., also two steamers were allocated for the River Plate at 120s. On the Swansea market the demand for loading space continues on a brisk scale, and recent rates were quoted with consistent firmness for all directions, and for scheduled ports the maximum rates were forthcoming. The following fixtures were the only ones disclosed:—Havre at 45s. 9d., Caen at 46s. 6d., and five steamers for Rouen at 48s. 9d., neutral vessels being fixed in each case.

Hull. The market has a firm tone all round and business to Allied destinations is fairly satisfactory. In the North French market, where there is the chief inquiry, a moderately active trade continues to pass in tonnage of varying sizes down to small sailing vessels. The West Italian market shows a good inquiry, but there is some difficulty in securing tonnage for this particular trade. The neutral markets are full of inquiry, but there are many restrictions to business in these trades.

THE COAL MARKETS.

(From Our Own Correspondent.)

All round the coal markets have lately exhibited a stronger tone, and this present position is more satisfactory than it has been for some weeks past. At the principal coal exporting ports more tonnage has come to hand, thus enabling the collieries to dispose of some of their surplus stocks. The demand, too, has been good and fairly constant for practically all classes of coal, and steam coals especially have displayed an unwonted activity.

Perhaps the most sluggish feeling has been felt in the bunker coal section of the markets of the North-East Coast and South Wales. Notwithstanding the more active movement of shipping the demand is not very considerable and the trade is consequently not brisk. For ordinary Durham bunkers there is not a very considerable inquiry and these are in plentiful supply at minimum prices which range from 24s. to 27s. 6d. according to quality. Special bunkers for export are, on the other hand, scarce, and rather stiffly held, so that the minimum figure of 30s. is a nominal quotation. In South Wales there is some demand for bunkers of the best class, but inferior bunker coal is rather a drug in the market. Prices rule from 20s. 6d. to 24s. The supply is over abundant.

On the North-East Coast not only are the markets active but future prospects are quite good. The amount of shipping on hand and in sight is distinctly good, having regard to existing conditions. The collieries are busy and little, if any, time is being lost. There is especial briskness in the steam coal section of the market. All best quality steam coals are in request and firmly held, and even inferior qualities have shared in the improvement. There is not so much inquiry for smalls, the stocks of which are more than sufficient for current requirements, and consequently the tone is weak. Durham gas coal and house coal have been moving off briskly, and coke is in considerable request. The export trade, generally speaking, has a distinctly better aspect, while the inland trade is excellent.

Approximate quotations are: for best Blyth steams, 30s. to 32s. 6d., and smalls, 18s. 6d. to 20s. 6d.; Tyne primes, 29s. 6d. to 32s., and smalls, 25s. to 27s. 6d.; second steams, 25s. 6d. to 29s. 6d., and smalls, 18s. 6d. to 20s. 6d.; unscreened steams, 24s. to 25s.; North Northumberland steams, 28s., and smalls, 20s.; smithies, 25s. to 30s.; nuts, 32s. 6d. to 33s. 6d.; Durham gas coals, 23s. 6d. to 30s.; house coal, 20s. to 22s. 6d.; coking coal, 17s. to 25s.; bunker coal, 24s. to 27s. 6d.; foundry coke, 42s. 6d. to 45s.; and blast furnace coke, 35s. 6d.

So far as the South Wales markets are concerned, though the position is not so favourable as on the North-East Coast, the trade is certainly more active than it was some weeks ago. The markets are rather excited by the question of the disposition of the exporters' share of the brisk tonnage freight, which, amounting to 1s. per ton, is by a recent order to go to the collieries. A good deal of opposition has naturally been raised to the proposal.

The collieries are working rather irregularly. While those producing the best quality steam coal are busy, many of the others are in a less satisfactory position and in some cases probably would like to close down altogether if they were allowed to do so. Bituminous coals are moving off quite freely, both gas and house coal being actively inquired for. There is very little trade in smalls, but coke and patent fuel is a good market.

Approximate prices are: for best quality steams, 35s. 6d.; seconds, 33s. 3d. to 34s.; ordinaries, 32s. 6d.; dry coal, 31s. to 32s. 6d.; smalls, 20s. to 25s.; best large Black Vein, 32s. 6d.; Western Valleys, 31s. 6d.; Eastern Valleys, 30s. 6d. to 31s. 6d.; nuts, 30s. 6d. to 32s. 6d.; dull, 16s. 6d. to 20s. 6d.; house coal 33s. 3d. to 35s. 6d.; No. 3 Rhonddas, large, 33s. 3d., and smalls, 28s. 6d.; No. 2 Rhonddas, large, 29s. 6d., and smalls, 19s. 6d. to 21s. 6d.; through and through coal, 24s. 6d. to 26s.; gas coal, 23s. 6d. to 27s. 6d.; and patent fuel, 32s. 6d.

The Scottish coal markets continue to experience a marked measure of prosperity. Requirements are almost greater than the collieries can meet at the present time, this being especially the case in the West of Scotland, where the inland demand is particularly strong. The export business of Fifeshire has had a spurt, but the

has fallen off again, but in the Lothians the effect of Admiralty requirements continues to be felt.

Prices are, subject to the addition of the 2s. 6d. a ton war wage increase, for splint coal, 28s. to 30s.; Hartleys, 29s.; Ells, 26s. 6d. to 28s.; screened Navigations, 28s. to 30s.; unscreened Navigations, 25s. 6d. to 28s.; steam coal, 27s. 6d.; and nuts, 24s. to 25s.

The Hull coal market has experienced no material change. The demand still exceeds the supply, as the requirements of the authorities and the exports to allied destinations are fully kept up. Inland the pressure for coal continues and grows, so that no surplus is left on the market.

Prices are approximately for Hartleys, 30s.; steams, 30s. to 32s. 6d.; gas coals, 27s. 6d. to 28s. 6d.; house coal, 30s.; nuts, 25s. 6d. to 27s. 6d.; and smalls, 22s. 6d. to 23s. 6d.

At Liverpool steam coals are fully taken up, and for the superior qualities from Derbyshire, Yorkshire and Lancashire the collieries have orders which will keep them occupied for some weeks. Other qualities of steam coal are also in demand, and the bunker coal trade is quite good.

The Midland coal trade has suffered no diminution in activity. Not only are the munitions and manufacturing centres taking large quantities of steam fuel, but the railways also are absorbing much coal and gas, and house fuel is a very busy trade.

The London market has felt the effect of the recent congenial weather, so that house coal has been less prominently in request, but steam fuel is still being steadily drawn upon and gas coal also has moved off well. The supplies are satisfactory for the time being.

COMPANY MEETINGS.

Globe Shipping Company, Ltd.—The third annual meeting was held on March 16 at Baltic House, Cardiff.

The Chairman (Mr. A. Mitchelson), in moving the adoption of the report, said the present found the company in an excellent position. They began the year 1917 with three steamers, and during that period lost them by direct enemy action, finishing up the year, as a result of replacements, with two steamers. Since the date of the accounts, another of their steamers had been driven ashore and become a total wreck. Since the publication of the report they had purchased another ship, and at the present time still owned two steamers. With regard to the past year's working, the result could not be regarded as unsatisfactory. In the course of his remarks at the last annual meeting, he mentioned that in consequence of the increasing measure in which the Government were commandeering the diminishing tonnage available at Blue-book rates of freight, profits were likely to be considerably reduced. That forecast had undoubtedly been fully justified, and the combined factors of Blue-book rates and enormously increased costs, particularly in the matter of war risk insurance, had necessarily made very serious inroads upon the earnings of shipping companies. The shareholders, however, had, he thought, good reason to be satisfied with what the company had been able to do during the three years of its history, the dividends averaging over 26 per cent., less tax. They had increased the dividend for the past year because their cash position was so strong as to justify less liberal allocations to reserve, and, after providing for depreciation, they felt justified in distributing pretty well up to the hilt of their profits. The position to-day was that on the small called-up capital of £30,000 they had two steamers running, and a substantial amount of money in hand, the main proportion of which was invested in War Loan. He thought they had done the right thing in taking the course recommended a short time back to fully disclose the position of the company to the shareholders, viz., that of confining themselves, for the time, to two steamers only, and keeping the balance of cash resources in War Loan. It was still felt that it would not be in the shareholders' interest to purchase more tonnage at present. There was no doubt that, some time back, profits were made on an excessive scale, but now, under rigid Government control, combined with enormous expenses, particularly in war-risk insurance, the pendulum had swung to the opposite extreme, and there was practically little or no inducement to develop or even to carry on business, which was much to be deplored, for the reason that so many old and experienced shipowners are giving up their business now to the detriment of the interests of the country. He hoped that the Government would soon see their way to grant more reasonable terms. They had determined for the present not to increase their fleet, but when conditions were more favourable further tonnage would be acquired.

Mr. T. B. Humphries seconded the resolution, which was carried.

COMPANY REPORTS AND DIVIDENDS.

Schleppschiffahrt Gesell. Unterweser.—This company pays 13 per cent. dividend compared with 10 per cent. last year.

Court Line, Ltd.—The directors recommend a final dividend of 7 per cent., making 10 per cent. for 1917. For the previous year 20 per cent. was paid.

Lambert Brothers, Ltd.—The directors have decided to pay an interim dividend of 5 per cent. on the ordinary shares to those shareholders registered on March 7. Warrants to be payable on March 25.

British Maritime Trust.—Bonus of 1 per cent., making 6 per cent. for the year; £50,000 is put to general reserve, and £56,384 is carried forward. Last year the distribution was the same, £50,000 put to reserve, and £49,824 carried forward, subject to excess profits duty.

Hollandsche Stoomboot Maatschappij.—The accounts for the past financial year show a net profit of 1,054,816 fl., as against 977,498 fl. the previous year. A dividend of 5 per cent. has been declared on the preference shares and 15 per cent. on the ordinary shares, leaving 13,537 fl. to be carried forward.

Dividends for 1917.—*Hansa* announces the following dividends for 1917:—Dampfschiffahrtsgesell. Neptun (Bremen), 10 per cent. (compared with nil last year). Flensburger D.G. von 1869, 16 per cent. (10 per cent.). Flensburger Schiffsparten Vereinigung A.G., 20 per cent. (30 per cent.), Elmshorner Dampfschleppgeschiffahrt A.G., 8 per cent. (6 per cent.).

Cairn Line of Steamers, Ltd.—The directors state that, owing to the vessels being all under Government control and various matters requiring adjustment between the company and the Government, the profit and loss account, balance-sheet and report cannot be sent to shareholders. They therefore propose to confirm the dividend already paid.

Bennett Steamship Company, Ltd.—The gross profit for 1917 was £43,239. The dividend is 10 per cent. and bonus of 10 per cent. both free of tax: £1,000 is put to reserve (making that fund £21,000), and the carry forward is £34,039, subject to income tax and excess profits duty. Last year the gross profit was £84,850, and the dividend 10 per cent., along with a bonus of 70 per cent., while for 1915 the dividend was 20 per cent.

King's Lynn Docks & Railway Company.—The report for the year ended December 31, 1917, states that the balance standing to credit of net revenue, after providing for interest on debenture stock and deducting interim dividends on preference stocks paid in respect of the half-year ended June 30 last, is £4,222, which enables the directors to pay final dividends for the year ended December 31, 1917, of £2 per cent. on the Consolidated 4 per cent. preference stock, making the full dividends on those stocks for the whole year; and also to pay a dividend for the year of £1 10s. per cent. upon the 5 per cent. preference stock, 1884, leaving a balance of £94 to be carried forward.

Century Shipping Company, Ltd.—The directors in their report for the year ended May 31, 1917, state that the profit on completed voyages, &c., after providing for expenses, is £310,439, to which is added balance brought forward (less amount voted to directors' fees for 1915-16), £217,494, and profits on investments, £95,000, making a total of £622,933; which has been appropriated as follows: reserve fund, £161,460; provision for excess profits duty and income tax, £279,429; depreciation, £28,950; war bonus fund, £1,353; dividends paid December 1, 1916 on preference shares for half-year ended November 30, 1916, at 5 per cent. per annum, £306; on ordinary shares to November 30, 1916, at 30 per cent. per annum, £36,172; leaving a balance of £113,063, from which has to be deducted: dividends paid June 7, 1917, calculated to May 31, 1917, on preference shares at 5 per cent. per annum, £2,506, on ordinary shares at 30 per cent. per annum, £36,172; carrying forward £74,384.

Sydney Harbour Trust.—The annual report of the Commissioners for the year ended June 30, 1917, states that the revenue for the year amounted to £511,980, and working expenditure, including Commissioners' salaries, amounted to £140,616. The amount expended on renewals and replacements was £24,970, which had been charged against the trust. The outlay from loan votes was £650,528, in which is included £343,873 for resumption

of property. The interest on capital debt amounted to £330,954. The capital debt at June 30 last amounted to £8,598,939. The surplus for the year's transactions, after deducting £24,970 for renewals and replacements, amounted to £15,441. The gross revenue showed a return of 6·19 per cent. on capital, as compared with 6·40 per cent. for the preceding year, and the net revenue 4·49 per cent., against 4·50 per cent., while the net surplus was 0·19 per cent., against 0·37 per cent. The ratio of working expenses (excluding interest and renewals) to gross revenue was 27·46, against 29·60 per cent. During the year the total number of vessels entering the port was 8,453, with a net register tonnage of 6,725,828, which compared with the previous year showed a falling off of 832 vessels and 869,459 tons. The goods imported amounted to 4,054,984 tons, as compared with 4,421,442 in the preceding year. The value of oversea, inter-State and State imports into Sydney was £56,216,354, as compared with £54,960,097 for the preceding year. The value of oversea exports was £38,213,412, compared with £31,745,839.

COMPANY REGISTRATIONS.

Stringers' Steam Fishing Company, Ltd.—Capital, £12,000, in £1 shares. Objects: Owners of trawl fishing smacks, cutters, carriers and other vessels, &c., and to enter into an agreement with Alfred, Alice, Walter, Herbert and Harold Stringer and Faith O'Dea, trading as "Stringer Brothers." Signatories:—

Alfred Stringer, Westow House, West Skirbeck, Boston, fish merchant.
Walter Stringer, Oakleigh, Tawney Street, Boston, fish merchant.
Herbert Stringer, Egremont, Tunnard Street, Boston, fish merchant.
Harold Stringer, Minyip Villa, Skirbeck Quarter, Boston, fish merchant.

The first directors are: Alfred Stringer, Walter Stringer, Herbert Stringer and Harold Stringer. Qualification: £800. Remuneration: £500 per annum, divided between them. Solicitor: C. N. Tunnard, Boston. Private company.

Société American de Machines-Outils, Ltd.—Capital, £40,000, in £1 shares (10,000 pref.). Objects: Mechanical, industrial and consulting engineers, manufacturers of and dealers in plant, machinery, apparatus and tools, electricians, motor-boat builders and owners, &c. Signatories:—

G. Anzani, 489, Cowper Street, E.C.2, mechanical engineer.
O. C. Selbach, 28, Russell Square, W.C.1, industrial and mechanical engineer.

The first directors are: O. C. Selbach (permanent managing director, American citizen), J. A. Moore, A.M.I.C.E. (British), G. Anzani (Swiss), and A. P. Rosselet (Swiss). Registered office: 28, Russell Square, W.C. Private company.

Edmund Thompson & Son, Ltd.—Capital, £5,000, in £1 shares. Objects: To take over the business carried on by E. E. Thompson, at Bank Side, Sculcoates, Hull, and to carry on the business of dock, dry dock, wharf, jetty, pier, warehouse and store proprietors, shipowners, shipbuilders, shipwrights, marine engineers, dredgers, tug owners, English and foreign timber merchants, anchor, chain and wire rope makers, ship store keepers, compass and nautical instrument makers, shipbrokers, salvors, &c. Signatories:—

E. E. Thompson, Bank Side, Sculcoates, Hull, shipbuilder.
J. W. Thompson, Bank Side, Sculcoates, Hull, shipbuilder.

The first directors are: E. E. Thompson and J. W. Thompson. As soon as John H. Whittaker, Ltd., has taken up at least £2,000 ordinary shares, and so long as it continues to hold the same, J. H. Whittaker shall be a director. Solicitor: W. B. Cooper, LL.B., Hull. Private company.

Motive Power Improvement Company, Ltd.—Capital, £6,250, in £1 shares (2,500 preference). Objects: Mechanical and electrical engineers, manufacturers of machinery of all kinds, marine engineers, shipowners, shipbuilders, &c. Signatories:—

F. H. Wyvill, 1, Fairfield Road, Crouch End, N., law clerk.
R. Spence, 77, Drakefield Road, Tooting, S.W., accountant's clerk.

The first directors are to be appointed by the subscribers. Registered office: Norwich House, Holborn, W.C. Private company.

Carter & Harrison, Ltd.—Capital, £5,000, in £1 shares. Objects: Consulting, marine and general engineers, naval architects and surveyors, iron, brass and general founders, boiler makers, steamship, yacht and launch builders, &c., and to enter into an agreement with W. C. Carter and H. S. Harrison. Signatories:—

W. C. Carter, 15, Great St. Helens, E.C., consulting engineer.
H. S. Harrison, 4, Mosley Street, Newcastle-on-Tyne, consulting engineer.

Permanent directors: W. C. Carter (chairman) and H. S. Harrison. Remuneration as fixed by the company. Registered office, 15, Great St. Helen's, E.C. Private company.

QUESTIONS IN PARLIAMENT.

Marine Losses during the War.

Sir Fortescue Flannery, on March 13, asked the Secretary to the Admiralty whether his attention had been drawn to a statement at the meetings of the Chamber of Shipping that the whole output of merchant shipbuilding since the commencement of the war had not been enough to replace the loss by marine causes alone, leaving the losses by enemy action yet to be made up; and whether he could state what steps the Admiralty would take in regard to all engaged in shipbuilding showing them the urgency of new construction and the national peril of delay.

Dr. Macnamara: My hon. friend's question refers to the report of a speech by Sir John Ellerman at the annual meeting of the Chamber of Shipping on March 6, in the course of which Sir John Ellerman is reported to have made the statement embodied in the question, namely, that he believed that he was right in saying that the whole output of this country since the commencement of the war has not been enough to replace the losses by marine causes alone, leaving the losses from enemy action yet to be made up. That statement is very far from being correct, and I can hardly believe that Sir John Ellerman has been accurately understood. As a matter of fact, new merchant construction during the war is several times the total of marine losses. The debates of yesterday and of last week have, I feel confident, materially assisted in bringing home to all concerned the urgency of new construction and the national peril of delay. As far as we are concerned, we shall certainly take every step to keep the matter in the most prominent way possible before all those to whom we look to give us new tonnage with the utmost possible expedition.

Workers on Concrete Ships.

Mr. Tyson Wilson, on March 13, asked the Parliamentary Secretary to the Ministry of National Service whether he was aware that skilled workmen engaged on the construction of concrete ships at Hanworthy were receiving their calling-up papers, that the recruiting officer stated that the military authorities had not been informed that the work was shipbuilding; and whether, in view of the serious shortage of ships, he would give instructions that men engaged on this class of work must not be called to the colours.

Mr. Beck: Instructions have already been issued to all directors of National Service to the effect that men employed by firms engaged in the construction of concrete ships are to be dealt with in the same manner and to receive similar protection under the Schedule of Protected Occupations as employees on other forms of hull construction and repair. If the hon. Member will let me have the names, addresses, and full particulars with regard to the men at Hanworthy who are alleged to have been irregularly dealt with by the recruiting authorities and also the name of the firm, I will cause investigations to be made into the matter.

Mr. Tyson Wilson: Will the hon. gentleman see to it that these instructions are so framed that one gentleman cannot interpret an instruction in one way and another gentleman in another way?

Mr. Beck: That is why I asked for the information. I believe the instructions are being interpreted properly, but I will make inquiries.

The "Abydos."

Replying to Mr. King, who, on March 13, asked for particulars regarding the requisitioning of the P. and O. steamship *Abydos*, Mr. Herbert Fisher (on behalf of the Secretary for India) stated: The vessel was requisitioned by the Government of India on August 30, 1916, for use as a floating workshop at Basra. She left India for Basra on November 22, 1916, and was discharged from service on February 3, 1917. The Government of India have been asked to report the amount expended on fitting up the vessel and the reason for releasing her. The information is not available here.

In answer to a further question, Dr. Macnamara informed the hon. member that the *Abydos* was not under Admiralty control when she was requisitioned by the Indian Government in 1916, nor had she been under Admiralty control at any subsequent time.

Examinations of Marine Engineers.

Sir Fortescue Flannery, on March 13, asked the Parliamentary Secretary to the Ministry of National Service whether he was aware that, notwithstanding Circular 1584, dated June, 1917, issued by the Board of Trade, which allowed two months on shore for preparation by sea-going engineers for Board of Trade examination, recruiting officers had in some instances issued, before the expiry of the time

named, calling-up notices to seagoing engineers in course of preparation for examination; and whether he would take steps to call the attention of all recruiting officers to the circular above referred to, so that seagoing engineers might have proper time to prepare for their examinations of competency.

Mr. Beck: I am not aware of any such practice on the part of recruiting officers as that referred to by the hon. Baronet. If he will supply me with the names and addresses of men to whom he alleges that calling up notices have been sent in contravention of the Board of Trade circular referred to by him, I shall be glad to investigate them.

Sir John Ellerman's Speech.

Mr. Stewart, on March 14, asked the Secretary to the Admiralty whether his attention had been drawn to a statement recently made by Sir John Ellerman that for a period of 13 months the whole of the resources of the country had built 17 steamers, of a gross tonnage of 86,000 tons; and whether he would now give the correct tonnage of shipping built in the period mentioned.

Dr. Macnamara: I think my hon. friend has now covered the whole of Sir John Ellerman's statement. It is quite true that he said at the Chamber of Shipping meeting on March 6, that up to the end of February, or for a period of 13 months, in which the whole resources of this country have been devoted to new construction, 17 steamers of 86,000 tons gross have been constructed. He was here, of course, referring only to the standard ships. But he went on to say, and quite rightly, that during the corresponding period the output of vessels constructed by private enterprise amounted to over 1,030,000 tons. As a matter of fact, Sir John was inside the figure, and, of course, to that output must be added the output of Navy tonnage during that time.

Mr. Stewart: Is the right hon. gentleman quite satisfied that ships launched in November and December were in proper condition for launching, and that they were not put into the water prematurely, thereby giving a better return for the last quarter of the year than was justified?

Dr. Macnamara: I cannot say anything about that matter.

Mr. Joynson Hicks: Having regard to the very serious statement just made by my hon. friend, will the right hon. gentleman cause inquiries to be made?

Dr. Macnamara: Certainly: if my hon. friend will put down a question.

Extension of Shipyards and Labour Supply.

Sir Richard Cooper, on March 14, asked the Secretary to the Admiralty: (1) Whether he was satisfied that all available discharged soldiers who were suitable for work in shipyards were being supplied to those industries by the labour exchanges and other agencies for placing that class in civil employment; and (2) whether shipyards were being worked to their full capacity; and, if not, had the facts been adequately communicated to the employers and workers in this industry, and were there no further means to stimulate the output of shipbuilding.

Dr. Macnamara: My hon. friend may rest assured that every effort is being made to utilise to the utmost extent the full capacity of the shipyards in this country, and private yards are being extended so as to give them a greater number of berths and also to provide them with the additional plant necessary for increased output. Down to March 13, 151 extension schemes have been sanctioned, involving additions to machinery and plant, extension of some of the existing ships, and the addition of new ships. As regards skilled men returned from the colours, on February 14 I stated that the War Office had consented to the release of 20,000. I also said on that date that we hoped that these numbers would be forthcoming at the rate of 1,000 per week during the latter half of February and onwards. Down to March 12, 1,098 skilled men have been released and sent to the yards and shops, and 790 are in the depot awaiting transfer.

Sir Richard Cooper: Is it a fact as reported by a responsible shipowner, that the shipyards are stopping work at 12 o'clock on Saturday, and is it not possible to further increase the output of the yards by working later on Saturday and on Sunday?

Dr. Macnamara: I do not know about the closing on Saturday. There must be some men engaged, at any rate. But you will not increase the output by keeping the men continuously on the stretch.

Mr. H. Samuel: With respect to the 151 extensions to private shipyards that have been sanctioned, will the right hon. gentleman say during what period they have been sanctioned, how far back they go, and how many of them have, in fact, carried into effect?

Dr. Macnamara: I cannot answer the first part of that question without notice, but I can answer the latter part. Five have been completed. I can give further information. One hundred and seven have been begun. Eight of them are for extended slips, and 44 for new slips.

Mr. Peto: Has the Department formed any estimate as to when any result from these steps that have been taken to increase the output may be anticipated?

Dr. Macnamara: On Wednesday I stated that two slips are ready now. Does my hon. friend refer to the national yards or to these extensions?

Mr. Peto: To these extensions.

Dr. Macnamara: I am afraid that I cannot answer that question.

Mr. Watt: Has the principle of different slips been suggested to the Department so that the machinery can be kept going?

Dr. Macnamara: We have endeavoured to modify the various standard ships in order that the capability of the separate individual yards may be met.

Flour Freights to Ireland.

Sir L. C. Money (Parliamentary Secretary to the Shipping Controller) informed Mr. O'Donnell, on March 14, that a maximum freight for flour to Irish ports was established on March 1.

Large Ships in Danger Zone.

Sir Richard Cooper, on March 14, asked the Parliamentary Secretary to the Shipping Controller whether, with a view to reducing the risks to shipping tonnage, he had considered the possibility of exchanging large British ships for an equal tonnage of small ships of neutral countries in order that the larger ships should be employed outside the danger zone.

Sir L. C. Money: Such a measure as my hon. friend suggests would have the effect of reducing the amount of ocean-going tonnage in employment for war needs and is therefore not practicable in the present tonnage position.

Output of Tonnage in February.

Answering Mr. Herbert Samuel, on March 14, Dr. Macnamara (Secretary to the Admiralty) stated: The output of mercantile shipping in the United Kingdom in February, 1918, was 100,038 gross tons.

Tonnage Output a Year Ago.

Replying to Mr. H. Samuel, on March 18, Dr. Macnamara stated: The gross tonnage of mercantile shipping completed in January, 1917, was 48,089 tons, and in February, 1917, it was 79,451 gross tons.

Dublin and Shipbuilding.

In reply to Mr. Byrne, who, on March 18, suggested the establishment of a national shipyard in Dublin or other part of Ireland, Dr. Macnamara (Secretary to the Admiralty) said that there was no intention of establishing a national shipyard in Dublin or in any other part of Ireland. It had been suggested to the Dublin Dockyard Company that a site should be used as an extension of their existing yard, but up to the present the Dublin Dockyard Company had not pursued the matter further. Great difficulty would be experienced in providing the necessary material and plant for the equipment of a national yard in Ireland.

Protected Occupations in Shipyards.

Mr. Acland Allen, on March 18, asked the Parliamentary Secretary to the Ministry of National Service whether any men had been withdrawn this year for military service from the mercantile shipyards; and whether men were still being withdrawn.

Mr. Beck: Men engaged in occupations dealt with in the Schedule of Protected Occupations who are available for recruitment, are not called up by the Recruiting Authorities from Admiralty or Ministry of Munition firms until their names have been notified to the Recruiting Official concerned by the Admiralty Representative, or Munition Area Dilution Officer, as the case may be. The Schedule affords complete protection to men engaged in certain specified occupations in hull construction and repair.

Babcock & Wilcox in Spain.

Replying to Sir J. D. Rees, on March 18, Sir Albert Stanley (President of the Board of Trade) said: I understand that an agreement has been concluded between Babcock & Wilcox and certain Spanish interests for the creation of a large constructional company in Spain, and that one of the terms of the agreement is that the company should purchase in the United Kingdom all imported materials, plant, &c., provided that equal conditions of quality and price are obtainable. I regard this condition as one of great importance to British trade, and trust that other firms who

may make contracts for industrial enterprises overseas, may see their way to securing the insertion in such agreements of similar provisions.

INSTITUTION OF NAVAL ARCHITECTS.

The Spring meeting of the Institution of Naval Architects was opened in the Hall of the Royal Society of Arts on Wednesday, March 20, the President, the Right Hon. the Earl of Durham, K.C., G.C.V.O., P.C., in the chair.

The first business was the presentation of the annual report, which was read by the Secretary. The membership at the end of 1917 was 2,068, compared with 2,065 in 1916 and 2,092 in 1915. Reference was made to the Committee which was formed by the Council under the chairmanship of Mr. S. W. Barnaby to report upon the effects of mine and torpedo explosions on the structure of merchant ships. Certain recommendations were made to the Admiralty, the Board of Trade and Shipping Controller with a view of directing attention to the better protection of existing and future merchant ships against underwater attack, and most of these recommendations have been embodied in the Board of Trade regulations. As the result of a Joint Conference of representatives of institutions connected with marine engineering, convened last August at the instance of the Council of the Institution, the British Marine Engineering Design and Construction Committee has been formed under the chairmanship of Mr. A. E. Seaton, and is at present engaged in collating various rules relating to marine engines and boilers with a view to simplifying procedure and ensuring uniformity of production. The question of forming a joint Council representing the various engineering institutions and societies has been postponed for the present. The annual gold medal of the institution has been awarded to Professor G. W. Hovgaard, of the Massachusetts Technical Institute, Boston, U.S.A., for his paper on "The Buoyancy and Stability of Submarines," and the premium to Mr. J. J. King Salter, R.C.N.C., of H.M. Dockyard, Sydney, for his paper on "The Influence of Running Balance of Propellers on the Vibration of Ships." The Martell Scholarship (1917) has been awarded to Mr. H. C. Carey, H.M. Dockyard, Chatham, and the Earl of Durham's prize to Mr. H. D. Leggett, H.M. Dockyard, Portsmouth.

The result of the ballot for officers and Council resulted in the election of the Earl of Durham as President.

The Earl of Durham, in his Presidential address, after referring to the loss to the Institution by the death of Lord Brassey, dealt with the position of shipbuilding under Government control, expressing his views as an individual. This most disquieting and unsatisfactory condition was due in a considerable degree to the paralysing influence which seemed to be inseparable from Government control and national institutions. That the Government must control the operations of the war was a truism which nobody would dispute, but that they should personally manage all the productions whereby war was successfully carried on was a totally different proposition. He believed there would be a great increase in shipping in the future if the Government gave shipbuilders the control of their yards. It was vital and important that the shipbuilding industry should not be mismanaged by incompetent nominees of the Government. Unless there was there would be no improvement. The waste of time and money by the duplication of Government bureaucracies was colossal. Nobody in the shipbuilding industry desired to thwart or hamper the Government; on the contrary, its desire was to help the Government in every possible manner; but the Government should prove to the industry that it was handling this most important question wisely and properly. Then owners, builders and employees must realise on their side that the country looked to them for the utmost patriotic output that they could give.

Sir George Carter then read his paper on "Standard Cargo Ships," upon which there was a long and at times critical discussion upon the Government policy as to standard ships and the advantages of unsinkable ships.

The meeting met in the afternoon, when Mr. John Anderson read his paper on "The Most Suitable Sizes and Speeds for General Cargo Steamers."

PORT NOTES.

La Rochelle.—The *Journal Officiel* recently published a presidential decree, dated February 19, which authorises the La Rochelle Chamber of Commerce to borrow 300,000 fr. towards the expenses of installing capstans, &c., at that port.

STANDARD RATES OF PAY FOR NAVIGATING OFFICERS.

On February 26 the Shipping Controller announced the standard rates of pay for navigating officers on cargo liners and general trading vessels. At a meeting of the Navigating Officers' Panel, held on March 11, under the presidency of Sir Leo Chiozza Money, M.P., the following scale for officers serving on general trading vessels at weekly rates of pay and finding their own food was agreed to by the Board and has since been confirmed by the Shipping Controller:—

FIRST MATE

Gross tonnage	With superior certificate. Begin at	1st yr.	2nd yr.	3rd yr.	With home trade certificate as mate or foreign going certificate as second mate. Begin at	1st yr.	2nd yr.	3rd yr.	Uncertificated. Begin at	1st yr.	2nd yr.	3rd yr.
	£	£	£	£	£	£	£	£	£	£	£	£
1001 and over ...	6½	6⅝	6¾	7	6	6¼	6½	6⅝	5⅝	5¾	6	6¼
501 to 1000 ...	6¼	6⅜	6½	6¼	5⅞	5⅞	6	6¼	5⅜	5½	5⅝	6
201 to 500 ...				—	5½	5⅝	5¾	6	5⅜	5½	5⅝	5¾

SECOND MATE.

Gross tonnage	Certificated. Begin at	1st yr.	2nd yr.	3rd yr.	Uncertificated. Begin at	1st yr.	2nd yr.	3rd yr.
	£	£	£	£	£	£	£	£
1001 and over	6	6¼	6½	6⅝	5¼	5½	5¾	5⅞
501 to 1000 ...	5⅞	5⅞	6	6⅛	5	5¼	5⅛	5½
201 to 500	5¼	5⅜	5⅝	6	4⅞	4⅞	5	5⅛

Where food is found by the owners, the appropriate rates should be obtained by deducting from the above rates 25s. weekly or *pro rata* for part of a week.

These rates do not apply to the cases of oil tank steamers, motor vessels, sailing vessels, salvage and cable steamers, railway steamers and other exceptional matters, which have yet to be considered by the Board.

An officer's pay under the new scale will be determined as regards service by the period he has held his present post in the same employment as at March 11, 1918.

An officer will be entitled to back pay at the same rate for any period of service on articles or continuous employment with the same owners irrespective of articles from October 6, 1917, or from the date of commencing pay if subsequent thereto.

Increments will date from the anniversary of the date of taking up present post in the same employment.

ALLIED MARITIME TRANSPORT COUNCIL.

The Foreign Office and the Ministry of Shipping have issued the following announcement:

At the Paris Conference of December last it was decided to create an Allied Maritime Transport Council consisting of two Ministers each of France, Italy and Great Britain, and a representative of the United States of America, to supervise the general conduct of Allied maritime transport.

Since that decision was reached the necessary preparatory work has been proceeding, and the following representatives appointed by their respective Governments have now met for the first formal meetings of the Council which commenced at Lancaster House, London, on March 11, and are still proceeding:

France.—M. Clementel, Minister of Commerce and Industry; and M. Loucheur, Minister of Munitions.

*Italy.** Sgr. Crespi, Minister of Supplies; and the On. Salvatore Orlando, Commissioner for Mercantile Marine Construction.

United States of America. The Hon. Raymond B. Stevens, Vice-Chairman of the United States Shipping Board.

Great Britain. Rt. Hon. Lord Robert Cecil, K.C., M.P., Under Secretary of State for Foreign Affairs (Chairman); and Rt. Hon. Sir Joseph P. Maclay, Bart., Shipping Controller.

Secretary to the Council: Mr. J. A. Salter, Lancaster House, London, S.W.1.

The following representatives were also in attendance:

Accompanying the French delegates were M. Claveille, Minister of Public Works; M. Vilgrain, Under Secretary of State for Supplies; and MM. Bijard, Bletry, Charpentier, Kahn, Monnet, Serruys and Ulrich.

Accompanying the Italian delegates were Signor Bianchi, Minister of Transport; General Dall'Olio, Minister of Munitions; Prince

* These representatives attended at the first meeting. The formal appointments will be announced later.

Borghese, Italian Embassy; and Professor Attolico, C.B., M. Berino, Colonel Campolmi, Lieutenant Farina and Engineer Mosca.

Accompanying the American delegates were Messrs. G. Rublee, L. H. Shearman, D. P. Morrow, J. D. Greene, J. A. Field, L. H. Dow, G. D. Dutton, and Commanders L. B. McBride, U.S.N., and Paul Foley, U.S.N.

The purpose of the Council is to supervise the general conduct of Allied transport in order to obtain the most effective use of tonnage for the prosecution of the war, while leaving each nation responsible for the management of the tonnage under its own control.

With this object the Council will secure the necessary exchange of information and will co-ordinate the policy and action of the four Governments of France, Italy, U.S.A., and Great Britain, in adjusting their programmes of imports to the carrying capacity of the available Allied tonnage (having regard to naval and military requirements) and in making the most advantageous allocation and disposition of such tonnage in accordance with the urgency of war needs.

The Council will have at its service a permanent organisation consisting of four sections (French, Italian, American and British), the head of the British section being Secretary to the Council. The Council will obtain through its permanent staff the programmes of import requirements for each of the main classes of essential imports, and full statements as to the tonnage available to the respective Governments. It will examine the import programmes in relation to the carrying power of the available tonnage in order to ascertain the extent of any deficit, and will consider the means whereby such a deficit may be met, whether by a reduction in the import programmes, by the acquisition, if practicable, of further tonnage for importing work, or by the more economical and co-operative use of the tonnage already available.

The Members of the Council will report to their respective Governments with a view to securing that the decisions and action required to give effect to any recommendations made by the Council are taken in their respective countries.

THE WAR CABINET'S REVIEW.

The report for the year 1917 issued by the War Cabinet is a novel departure from precedent. Departure from precedent is, however, no novelty, and so we presume—in setting forth a record of their labours during the past year—the War Cabinet have not done it solely from mutual back-scratching motives. We can only express the hope that the enlightenment which the public profess to seek will be looked for in the pages of this report, for while one fancies one sees here and there the special pleadings of an advocate, the review is not only extensive but thorough. It is not intended here to deal with the work as a whole, but only to extract here and there a few of the observations relating to shipping and shipbuilding.

Reference is made to the creation of the Ministry of Shipping. At the end of 1916 the tonnage requisitioned by the State was less than one-half of the whole, and this was mainly used on purely military and naval services for the British Government or the Allies. During 1917 practically the whole of the remainder of the British ocean-going mercantile marine was brought under requisition at Blue-Book rates and organised as a national war service. The Dominion Governments also liberated much overseas shipping for war purposes, and neutral shipping was brought as far as possible into Allied service. A close scrutiny was then made of the countries from which the necessary imports could be derived, and shipping was concentrated on the shortest routes, thereby multiplying the number of voyages the ships could make in the year. Loading regulations were revised, which increased the carrying capacity from the 1913 figure of 106 to 150 tons per 100 tons net of shipping entering our ports, and arrangements were made for shortening the time occupied in the turn round of ships at the ports. In the latter part of the year the convoy system was introduced, which reduced the shipping losses, though it involved certain delays to individual ships. The result of this mobilisation and organisation of our shipping resources was that, despite the heavy submarine losses, British imports during September, October and November, were equal in quantity to those of February, March and April, notwithstanding the fact that great quantities of shipping were employed on directly military and naval duties, and that over 1,000,000 tons were lent to France, 500,000 tons were placed at the service of Italy, and much shipping was used for meeting the needs of Russia, Portugal and Greece as well. These results reflect the greatest credit on those who have been responsible for the direction of the shipping of the Empire. Nor must it be forgotten that these measures would have been fruitless unless the merchant service had accepted the responsibilities thus placed upon them and carried out their duties with a patience and disregard for danger worthy of the best traditions of the Navy.

In addition to these improvements in the methods of using shipping, a large programme of shipbuilding was put into operation, not only in British yards but in all the available yards in neutral countries as well. To ensure greater speed in building, a large number of the new ships were ordered to a standard design. In spite of the difficulties of all kinds which have confronted the production of ships, notably the shortage in the supply of steel plates and of labour, the output has steadily mounted. During 1917 1,163,500 tons of new ships were built, as against 542,000 tons in 1916, and by the end of 1918 the rate of output of all ships, war and merchant, ought to be double that of any previous year in British history. In order to make possible this increase 45 new berths have been provided in private shipyards, and the construction of three new national shipyards containing 34 berths has been begun. Besides this effort at home 175,000 tons of shipping were purchased abroad, an amount which would have been very greatly exceeded if the United States had not taken over the whole programme of ships being constructed on British account when they entered the war.

Labour questions in their relation to shipbuilding and transport are also discussed at length.

NEWS PARAGRAPHS.

Furness, Withy & Co., Ltd.—It has been decided by this firm to transfer their headquarters from Liverpool to London.

Engineers and Shop Stewards.—The 15 trade unions in the engineering trade which have taken a ballot on the question of including shop stewards among trade union officials announced their decision at Manchester last week. The vote in favour of the acceptance of the shop steward system was in the proportion of 55 to 1.

The Tyne Sailors' Home.—Mr. G. H. Stansfield presided at the annual meeting of the Tyne Sailors' Home, at North Shields, when it was stated that 5,738 seamen passed through the institution in the past year, the largest number of boarders accommodated at the Home since it was opened 60 years ago. The chairman remarked that the Home was likely to render still greater service in the future as the Tyne would be a more important centre than ever in the years to come.

Junior Institution of Engineers.—A successful opening meeting was held in Newcastle to complete arrangements for the future. Educational and social features of an attractive kind are provided for, and it has been decided to hold the meetings on the second Tuesday in each month. At the outset there was a hitch regarding the acceptance of the vice-presidency by Sir Charles A. Parsons, but a seeming misunderstanding has been cleared up, and the section is to be congratulated upon having secured so eminent an engineer as Sir Charles as its first vice-president.

Regulation of Ships' Lights.—The regulations relating to ships' lights in the Special Instructions to Merchant Vessels are amended by an Admiralty Notice to Mariners, No. 373 of 1918. It is now provided that in ships fitted with dimmers, bulbs of a higher candle power than allowed by the Regulations may be used, but lights are not to be shown of a brilliancy exceeding that quoted in the Regulations, except in special circumstances, such as imminent danger of collision, thick weather, or while navigating in and entering or leaving harbours, &c.; such ships are to be supplied with bulbs of the prescribed candle-power, which are to be inserted and used in the lamps if the dimmers fail from any cause.

Osaka Shosen Kabushiki Kaisha.—This company has decided to inaugurate a new regular freight service between Bombay and Marseilles, via Suez Canal, in connection with its existing Japan-Bombay service. This new service will, for the present, be run monthly with three steamers, commencing early in April. Through transportation from Japan to French ports and *vice versa* will be accepted under the company's own through bills of lading. The interests of the company in the Red Sea, Suez Canal and the Mediterranean will be represented by the Messageries Maritimes,

"SHIPBUILDING AND SHIPPING RECORD" TABLE OF SHIP SALES.

Name and Type.	Tonnage.	Dimensions. Draught in ( ).	Sold by, to	Builders, hull and year.	Machinery and builders	Remarks.
Factor, ss. (single dk.)	1,178 gr. 730 net 1,950 d.w.	227½′ × 35′ × 14½′ (15′ 8″)	J. Robertson & Co., Glasgow, to Geo. Gibson & Co., Leith	S. P. Austin & Son, Sunderland (1903)	19, 31, 51 × 36 (N. E. Mar. Eng. Co., Sunderland)	Sold last August for about £50,000.
Kirishimazan Maru, ss. (spar dk.) (ex *Fukoku Maru,* ex *Langbank*)	4,645 gr. 2,958 net 7,300 d.w.	382½′ × 47′ × 21¾′	Hashimoto Gomei Kaisha, Kobe, to Kobe Pier Co., Kobe	Russell & Co., Pt. Glasgow (1895)	23½, 40½, 68 × 48 (Dunsmuir & Jackson, Glasgow)	—
Koh-i-noor, ss.	884 gr. 367 net	300½′ × 32′ × 10½′	Fairfield S. B. & E. Co., London, to Thos. W. Ward, Ltd., Sheffield	Fairfield Co., Glasgow (1892)	45, 80 × 66 (Fairfield Co.)	Price about £6,200.
Royal Sovereign, ss.	891 gr. 365 net	300′ × 33′ × 10½′	Fairfield S.B. & E. Co., London, to A. W. Pickard & Co., London	Fairfield Co., Glasgow (1893)	45, 83 × 66 (Fairfield Co.)	Price about £8,500.
Landonia, ss.	2,504 gr. 1,505 net 4,100 d.w.	300½′ × 44½′ × 19½′ (19′ 3″)	Richards, Turpin & Co., Swansea, to the Gasony SS. Co., London	Clyde S. B. & Eng. Co., Pt. Glasgow (1917)	22, 35, 59 × 39 (Clyde S. B. & E. Co.)	—
Porthcawl, ss. (single dk.)	2,406 gr. 1,441 net 4,170 d.w.	295′ × 45′ × 20½′ (19′ 5″)	Porthcawl SS. Co., Cardiff, to the Scarisbrick SS. Co., Cardiff	Craig, Taylor & Co., Stockton (1915)	22, 36, 60 × 39 (N. E. Marine Eng. Co., Sunderland)	—
Southwaite, ss. (single dk.)	3,618 gr. 2,333 net 6,125 d.w.	343′ × 49½′ × 24½′ (22′ 9″)	Raithwaite SS. Co., Cardiff, to buyers not stated	Wm. Gray & Co., W. Hartlepool (1904)	25, 40½, 67 × 45 (Cen. Mar. Eng. Wks., W. Hartlepool)	Price about £90,000.
Teikoku Maru, ss. (spar dk.) (ex *Mazagon*)	5,175 gr. 3,228 net 7,300 d.w.	400′ × 48′ × 21¾′	Yamashita Kisen Kabushiki Kaisha, Kobe, to buyers not stated	A. Stephen & Sons, Glasgow (1894)	27, 45, 72 × 48 (A. Stephen & Sons)	—

and in the United Kingdom by M. Samuel & Co., general agents, while the company has its own special representatives for the United Kingdom and the Continent at 25 & 27, Bishopsgate, London, E.C.2.

World's Largest Concrete Ship.—According to a wireless message from the United States, and issued by the Admiralty, the world's largest concrete ship has been launched at a Pacific port, and named *The Faith.* The vessel is 320 ft. long, has a displacement of 7,900 tons, a deadweight capacity estimated at 5,000 tons, and will have a speed of 10 or 11 knots. The ship is ten times larger than any concrete vessel previously built in that country.

Education of Apprentices.—Mr. E. W. Fraser Smith, secretary of the North East Coast Institution of Engineers, expounded to an open meeting under the auspices of the Newcastle Teachers' Association, on Friday evening last, the Institution scheme for the better education of apprentices in the engineering and shipbuilding industries. The exposition was followed by a lengthy discussion, participated in by representatives of teachers, draughtsmen, engineering employers, educationists and socialists. No vote was taken, but it was evident that the scheme commended itself to the bulk of those present and the main objections taken were merely on points of detail.

Appointment of Marine Surveyors to the Board of Trade.—An examination for two appointments as engineer and ship surveyor, two appointments as ship surveyor, and two appointments as ship (nautical) surveyor, will be held in London on Tuesday, May 28, and following days. An appointment as examiner of masters and mates may be made by the Board of Trade from among candidates who qualify in the scheme for ship (nautical) surveyors. Any person desiring appointment must apply on a special application form, which may be obtained from the Assistant Secretary, Marine Department, Board of Trade, Whitehall Gardens, London, S.W.1. The list of candidates will be closed on Thursday, April 11, 1918. Candidates must be within the following limits of age on the first day of the examination :—Engineer and ship surveyor, 25 and 40 ; ship surveyor, 25 and 40 ; ship (nautical) surveyor (or examiner of masters and mates), 25 and 45.

Royal National Lifeboat Institution.—The Committee of Management have decided to establish a pension scheme for the widows and orphans of lifeboatmen who may be killed while carrying on their arduous duties. The system at present followed has, on the whole, worked well, but has had obvious disadvantages, the payment of a lump sum down being liable to lead to a rapid and, perhaps, unwise expenditure. The committee have therefore decided to establish a pension scheme, based broadly on the new Royal Warrant governing the cases of N.C.O.'s and men of the Naval and Military Forces of the Crown. Thus, the widow of a coxswain will receive a pension equivalent to that of a N.C.O. of high grade ; the widow of a second coxswain will get a pension equivalent to that of a lower grade N.C.O., and the widow of an ordinary member of the crew will get the same pension as the widow of a private. Dependant children will receive pensions on a definite scale.

THE SHIPBUILDING POSITION.

Among the many letters appearing in the Press on the shipbuilding position, Sir Thomas Sutherland in *The Times* says that the present control of the Government is a distinct failure, and the sooner shipowners and shipbuilders are free from Admiralty interference (except in the case of purely naval work) the sooner we arrive at an output of tonnage of a satisfactory character.

It is not, in his opinion, necessary to set up another department to control our commercial shipbuilding. This tonnage is built under the Survey of Lloyd's or some other registry, and any further inspection (than that required under the Board of Trade) is superfluous and obstructive. The more important of our steam companies employ additional inspectors of their own service, whose work is mainly that of daily report of progress, and who, in his recollection, have seldom to report on shortcomings or disputes with builders. If our shipworkers are to blame for supineness in zeal for the war in which we are engaged, he concludes, a list of the names of our lost ships, their tonnage, and lost lives would surely produce a startling effect.

Mr. Hugh Laing writes to *The Times* to point out that so far as the workers at Sir James Laing & Sons, Ltd., Sunderland, are concerned, he has compared the amount of gross tons of shipping constructed per man employed there during the years 1913 and 1914, and also during 1916 and 1917, and finds that during the latter two years the output per man was 16·88 per cent. in excess of the output of 1913 and 1914. Shortage of men is in a great degree responsible for shortage of output, and if the same number of men had been employed there during 1916 and 1917 as were employed during 1913 and 1914, four additional vessels, of a total deadweight capacity of over 34,000 tons, would have been completed and sent to sea over and above the ships which have actually been turned out in the two years referred to.

A letter from Sir William Rowan Thomson appears on page 310.

FORTHCOMING EVENTS.

INSTITUTE OF MARINE ENGINEERS.—Friday, April 5, annual meeting, at the Institute, the Minories, Tower Hill, London, E.C., at 6 p.m. (N.B.—Date of Annual Meeting has been altered from March 22.)

INSTITUTION OF ELECTRICAL ENGINEERS (MANCHESTER SECTION).—Tuesday, March 26, meeting at the Engineers' Club, 17, Albert Square, Manchester, at 7 p.m. Paper by Dr. S. F. Barclay on "The Mechanical Design and Specification of the Turbo-Alternator Rotor."

SHIPPING AND OTHER MEETINGS.

Mar. 26 (*Tues.*)—**Eskside Steam Shipping Company, Ltd.** (General), Whitby.

Mar. 26 (*Tues.*)—**Powell Duffryn Steam Coal Co.** (Extraordinary), 101, Leadenhall St., London, E.C., at 2.15 p.m.

Mar. 26 (*Tues.*)—**Regent's Canal and Dock Co.** (General), 5, Lloyd's Avenue, London, E.C., at noon.

Mar. 27 (*Wed.*)—**Manchester Ship Canal Co.** (General), Manchester, at 11 a.m.

SHIPPING SHARE MARKET.

The shipping stock and share markets have weakened under the influence of the prospect of reduced profits for the current year, and the indications that dividends for the year 1917 may be announced on a lower scale than had been anticipated. Most of the leading shares have given way slightly, although there is ever great pressure to sell. Court Lines, which had led the reaction, being influenced directly by the reduced dividend, have recovered their price in a remarkable manner in view of the lower yield now afforded by the shares. Prince Line shares are being dealt in at 5¾ ex the dividend, and there has been a large number of transactions in Cunard shares at about 84s., in anticipation of a good report. But the feature of the week has undoubtedly been the strength of shipbuilding and iron and steel shares, towards which public interest has for some time past been steadily veering. Wallsend Slipways have advanced to 75s. 6d. on the announcement of the distribution of bonus shares. The capital is to be increased and distributed as a bonus to the holders of ordinary shares in the proportion of one fully-paid share for each ordinary share held. North Eastern Marine Engineering and Swan, Hunter shares are also in demand on reports which come from the Newcastle market of impending developments. Armament shares have also been in request after a period of dullness, but Hadfield's were an exception owing to the disappointment on the dividend announcement. The iron and steel group continue to attract the attention of investors who desire a slight speculative element in their operations. Babcock and Wilcox are attracting attention on the agreement which has been entered into with a group of Bilbao capitalists to establish a subsidiary company in Spain. Stewarts and Lloyds are firm on the application of the company to the Treasury for permission to issue the remaining capital of £425,000 at par, which would mean a substantial bonus to the shareholders. Workington Iron shares changed hands at improving prices on the announcement that the dividend recently declared would be paid free of income tax, but has since fallen back to 28s. 3d. ex the dividend.

SHIPPING, SHIPBUILDING, ENGINEERING AND MARINE INSURANCE SHARE LIST.

SHIPPING.

Name.	Share and paid.	Extreme quotations, 1917.	Last ann. div. % or per share.	Yield. %	Last Quotation	Rise or Fall.
	£					
African S.S.	20	30½–25½	10	7½	28	
Allan Line ... ... Deb.	100	—	4	4½	92	
Anchor Line ... Cum. pref.	10	9½–8½	5½	5½	9½	
Do. ... ... Deb.	Stk.	105½–102½	4½	4½	103	
Argentine Nav. ... Cum. pref.	1	25/—14/3	6	5½	23/3	– /3
Do. .. ... Ord.	1	20/6—6/6	Nil.	Nil.	17/3	– /3
Australasian Un. S. Nav. Deb.	Stk.	80½–79½	4	5	81	
Belfast Steam ... ... "A"	10 (5pd.)	—	5	5	5	
British & Argen. Nav. ... Deb.	Stk.	84–80	4½	5½	81	
British India Nav. ... ... Deb.	Stk.	84–82	4½	5½	81½	
British S.S. Invest. Trust Def.	Stk.	460–344½	50*	11½	427	
Do. ... ... Pref.	Stk.	105½–104	6	5½	102	
Do. ... ... Deb.	Stk.	74½–70	4½	6 5/8	72	
Cairn Line ... ... Deb.	Bds.	94–90	5	5½	90½–91	
Do. ... ... Ord.	1	51/6—40/9	20†	8	54/–	
Clan Line ... ... Ord.	10	55½–26½	25	5½	49	+ 3/3
Court Line ... ... Ord.	£1	40/6—29/6	10	5½	36/3	– 1/9
Cunard SS. ... ... Ord.	1	85/—63/9	20*	5	85/–	
Do. ... Cum. pref.	Stk.	97½–82	5	5½	86½	
Do. ... ... Deb.	Stk.	100–93½	4½	4½	97½	
Elder Line ... ... Deb.	Stk.	95–89	4½	4½	103	
Elder Dempster ... Cum. pref.	1	19/—17/–	5*	6½	19/–	
Do. ... ... Deb.	Stk.	89–85	5	5½	82½	
Ellerman Lines ... Pref. Ord.	10	9½–8½	6½	6½	9½	
Do. ... Guar. pref.	10	9–8½	4½	5½	8½	
France Fenwick ... Cum. pref.	5	95/3–85/–	5½	6½	87/6	
Furness, Withy ... Ord.	1	60/9—41/6	20*	6½	66/3	+ 1–/3
Do. ... Cum. pref.	10	9–7½	5	5½	8½	
General Steam Nav. ...	1	24/9—21/6	10	7½	29/9	
Do. ... ... Pref.	1	19/4½–15/–	5	6½	15/3	
Houlder Line ... Cum. pref.	5	82/6–75/–	5½	6½	80/–	
Do. ... ... Deb.	Stk.	—	4½	4½	91	
Houlder Bros. ... Cum. pref.	5	—	5½	6½	4	
Do. ... ... Deb.	Stk.	—	4½	5½	82	
India Gen. Nav. & Rly. ... Ord.	10	11½–8½	6	5½	11½	
Indo-China N. ... Pref. Ord.	5	97/6–87/6	6	6½	97/6	
Irrawaddy Flotilla ...	40	—	15	5	120	
Khedivial Mail ... ... Ord.	1	40/—24/–	20	12½	38/6	
Do. ... ... Pref.	5	76/3—70/–	5½	7½	77/6	
Do. ... ... Deb.	Stk.	95½–93	4½	4½	94½	
King Line ... ... Ord.	1	42/6–31/6	16*	6½	49/6	
Lamport & Holt ... Cum. pref.	£1	20/4½–18/–	6	6	19/6	
Leyland (F.) ... Cum. pref.	10	8½–7½	5	5½	8½	
Mercantile SS. ... ... Ord.	5	30½–15	40	8	30½	
Do. ... ... Pref.	1	21/—15/9	5	6½	21/–	
Moor Line ... ... Ord.	10	35–20	30	6⅔	45	
Nelson Steam Nav. ... Deb.	100	—	5	5½	98½	
New Zealand ... ... Ord.	£10	8–7½	8	2½	32½	
Do. ... ... Deb.	Stk.	87½–86½	4	4½	88½	
Nitrate Producers SS. ... Ord.	5	25½–20	30	6½	24½	
Do. ... Cum. pref.	5	100/—90/–	5	5	5	
Oceanic Steam. Nav. ... Deb.	100	98½–84	4½	4½	94xd	
Orient.Stm.Nav.Co. Cum. pref.	10	9½–8½	5	5½	9⅛	
Do. ... ... Deb.	100	92–88	4½	5½	88	
P. & O. S. N. ... Cum. pref.	100	93½–84	5	5⅓	92	– ½
Do. ... ... Def.	100	342–295	18	5⅓	335	– 1
Do. ... ... Deb.	Stk.	65½–63½	3½	5½	64	
Prince Line	1	6⅛–3,7	30	5½	115/–	
R.M.S.P. ... ... Ord.	100	125–109½	7	5½	122	– 1
Do. ... ... Pref.	Stk.	85½–80	5	6	83½	
Do. ... ... Deb.	Stk.	86–79	4½	5⅓	79½	
Shaw, Savill & Alb. Cum. pref.	5	87/6–80/–	5½	5½	85/–	
Shell Transport ... ... Ord.	1	6⅝–3,6/3	35	6½	5⅛	
Do. ... Cum. pref.	10	9½–9⅛	5	5⅓	9⅛	
Sutherland SS. Co.	£1	75/—50/9	30	5½	105/–	
Union-Castle SS. Cum. pref.	10	7½–7⅛	4½	6	7 1/16	
Do. ... ... Deb.	Stk.	90–86	4	4½	89	
West Hartlepool ... ... Pref.	10	7½–7⅛	5½	6⅛	8 1/16	

INSURANCE.

Alliance	20 (2·4 pd.)	10½–9	12/–	7	9⅛	+ 1/16
London Assurance ...	25 (12½ pd.)	60½–48½	20	6	62½	
Merchants' Marine Insurance ...	10 (2½ pd.)	10⅛–6½	10	6	10 5/16	
N. British & Mercantile Ord.	25 (6½ pd.)	36–29	40/–	6½	34½	
Phœnix Assurance ...	10 (1 pd.)	7⅛–6	40	7	8 7/16	+ 5/16
Royal Exchange Assurance ...	Stk.	211½–187	10	4½	250½	+ 1
Sea Insurance	10 (2 pd.)	27½–24½	10	9	27	
World Marine, Limited ...	5 (2 pd.)	6½–5⅝	5	4½	6	

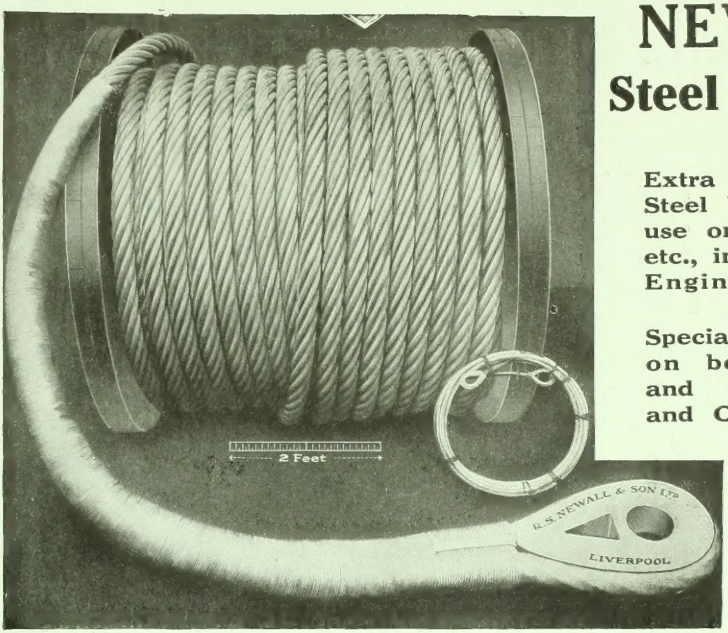
IRON AND STEEL.

Name.	Share and paid.	Extreme quotations, 1917.	Last ann. div. % or per share.	Yield. %	Last Quotation	Rise or Fall.
	£					
Babcock & Wilcox... ... Ord.	1	68/– 52/6	15	4½	69/1½	–1/1½
Baldwins ... Cum. pref.	1	20/—15/–	5½	5⅝	20/–	
Do. ... ... Deb.	Stk.	84–82	4½	5⅝	84	
Bayliss, Jones ... Cum. pref.	1	—	5	7½	7 1/16	
Bell Bros. ... ... Cum. pref.	10	10–9½	6	6	10	
Do. ... ... Deb.	Stk.	80–73½	5	7	74	
Bessemer (Henry) ... Ord.	1	34/6—24/6	12½	7½	33/–	
Bolckow Vaughan ... Ord.	1	30/—22/2	11	7½	29/6	
Do. ... ... Cum. pref.	20	17½–16½	5	5⅛	16,9	
Cargo Fleet Iron ... ... Ord.	1	24/9—17/3	3	2⅜	26/–	
Do. ... ... Deb.	100	84–81½	4½	5½	82	
Consett Iron Co. ... ... Ord.	1	36/3–24/10½	50	10	92/6	
Dominion Iron & Steel	Bds.	88½–71½	5	7	71	
Dorman, Long ... ... Ord.	1	50/—30/9	8†	—	38/9	+ -/3
Do. ... ... Deb.	Stk.	—	4	5½	71	
Ebbw Vale Steel & Iron ... Ord.	1	30/6—24/6	12½	9	28/9	+ -/3
Guest, Keen & Nttefids Ord.	1	89/—62/6	15*	3⅜	83 1/16	–1/1½
Do. ... ... Cum. pref.	5	5½–5	5	4½	5½	
Do. ... ... Deb.	Stk.	79½–73½	4	5½	77	
Hadfield's Steel Foundry Ord.	1	107/6–78/6	30	5½	117/6	
Ibbotson Bros.	5 (4 pd.)	7–6¼	7½	4½	6½	
Jessop (W.) & Sons ... Ord.	5 (4 pd.)	10–8	15*	6	9½	
Lanarkshire Steel Cum. pref.	10	—	5	7½	7	
Lysaght (J.) ... Cum. pref.	1	25/—20/–	6	6	20/–	
Do. ... ... 2nd pref.	1	19/9–19/4½	6	6	20/–	
Manganese Bronze ... Ord.	1	—	6	11	5½	
Do. ... ... Cum. pref.	1	—	6	8	4	
North-Eastern Steel ... Deb.	Stk.	—	4½	—	—	
Palmers Ship & Iron "A" ...	1	13/—9/9	Nil.	Nil.	13/9	
Scott (Walter) ... ... Ord.	1	29/4½–21/3	15	10⅜	29/–	
Do. ... ... Pref.	1	19/9—16/–	6	7½	19/9	
Sheffield Forge ... ... Ord.	1	—	15	4½	65/6	
Shelton Iron & Steel ... Ord.	1	24/6–16/10½	7½	6	21/7½xd	–1/1½
Do. ... ... Deb.	100	91½–91	4½	5½	91½	
S. Durham Steel & Iron ... Ord.	1	42/9—29/6	10	4½	43/–	
Do. ... ... Cum. pref.	1	20/9–18/7½	6	6½	20/9	
Do. ... ... Deb.	Stk.	81–80	4½	5½	80	
Steel Co. of Scotland ... Ord.	10	—	10	6½	16	
Stewarts & Lloyds Pref. ord.	10	17—16	10	6½	16	
Do. ... ... Cum. pref.	10	—	6	4½	13½	
Do. ... ... Cum. pref.	10	—	6	5½	11	
Stone (J.) ... ... Cum. pref.	10	8½–7½	5	6⅔	7 7/16	
United States Steel ...	100$	124—109½	8	7⅜	100 7/16	
Do. ... ... Cum. pref.	100$	—	7	6	114 1/16	
Vickers Ltd. ... ... Ord.	1	44/6–35/3	12½	5½	44 1/16	– /10½
Do. ... ... Pref.	Stk.	84–81	5	6	82	
Do. ... ... Deb.	Stk.	79–74½	4	5 5/16	76	
Weardale Steel ... Def. ord.	1	32/3–23/–	19½	13½	28/9	
Do. ... ... Cum. pref.	1	25/3–18,9	6	5½	25/–	
Do. ... ... Deb.	Stk.	—	4	6½	62	
Workington Iron & Steel Ord.	1	30/3—21/–	10	6⅔	29 3xd	+ -/3

SHIPBUILDING AND MARINE ENGINEERING.

Armstrong, Whitworth Ord.	1	45/—36/–	12½	5½	42/9	+ -/9
Do. ... ... Cum. pref.	5	73/9—67/–	4	5⅓	67/6	
Do. ... ... Deb.	Stk.	78–73	5	6⅔	75½	
Beardmore (W.) ... ... Deb.	100	93–89	4½	5	90	
Brown (John) ... ... Ord.	1 (10s. pd.)	28–/—22/9	12½	7	28/3	
Do. ... ... Cum. pref.	10	8⅝—7½	5	5½	8½	
Cammell Laird ... ... Ord.	5	7½–6½	10	7⅛	10 1/16	
Do. ... ... Cum. pref.	5	85/6—74/6	5	6½	83/6	
Do. ... ... Deb.	100	83½–79½	4½	5½	84	
Dunlop (Jas.) ... ... Ord.	1	28/9–16/–	10	9½	22/3xd	
Do. ... ... Cum. pref.	1	18/9–16/8	6	7⅛	17/6	
Fairfield Shipbldg. Cum. pref.	10	8½–8¼	6	7⅛	8½	
Fleming & Ferguson ... Ord.	10	—	10	7⅛	14½	
Gray (Wm.) ... ... Ord.	100	100–95½	4½	4½	97½	
Hawthorn (R. & W.) Leslie Ord.	10	25½–15½	12½	5	29	
Henderson (D. & W.) Cum. pref.	1	—	5	9	9	
Richardsons Westgarth Ord.	1	10/3—8/–	Nil.	Nil.	9/–	+ -/3
Do. ... ... Cum. pref.	1	19/9—12/6	Nil.	Nil.	17/7⅛	+ -/1½
Do. ... ... Deb.	Stk.	67–62⅜	4½	6⅛	66	
Simons (W.) ... ... Cum. pref.	10	—	5	5	9 1/8	
Swan, Hunter & W. R. ... Ord.	1	51/—33/6	12½	5½	58/6	+ 3/6
Do. ... ... Cum. pref.	1	17/3–17/–	5	5½	17/–	
Do. ... ... Deb.	Stk.	78–77	4½	5½	77	
Thornycroft (John I.) ... Ord.	1	48/—16/–	17½	8½	41/–	
Do. ... ... Cum. pref.	1	19/—16/–	6	6½	18/6	
Do. ... ... Deb.	100	—	5	5½	82	
Wallsend Slipway ... Ord.	1	2–1⅛	10	2⅔	72/6xd	
Do. ... ... Cum. pref.	1	1–1	5	5	1	

* Including bonus. † Also 20 % in shares. ‡ Treasury price.



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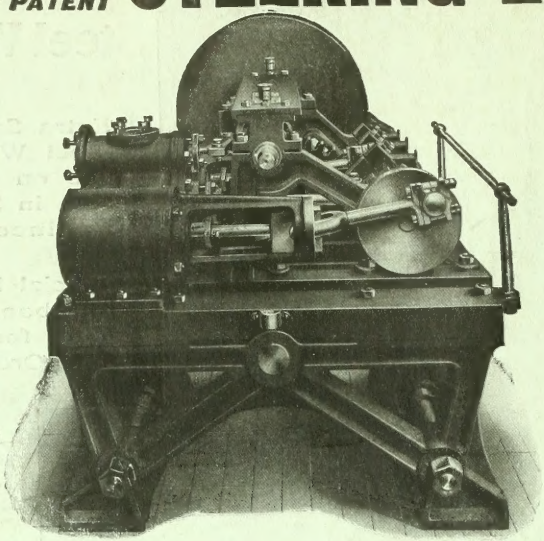

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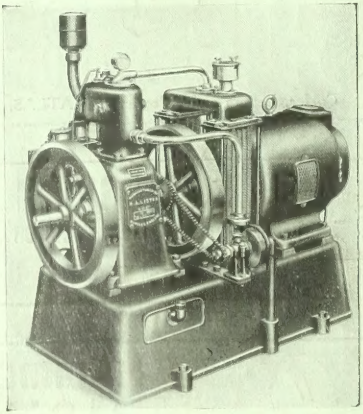

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